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TRANSACTIONS  
OF  
THE AMERICAN PHILOSOPHICAL SOCIETY.

ARTICLE I.

*Description of New Freshwater and Land Shells. By Isaac Lea.  
Read December 19, 1834.*

ANODONTA GIGANTEA. Plate I. fig. 1.

*Testâ ovatâ, inflatâ, antice latissimâ, postice angulatâ, inæquilaterali; valvulis crassis; nalibus prominentibus; margaritâ albâ.*

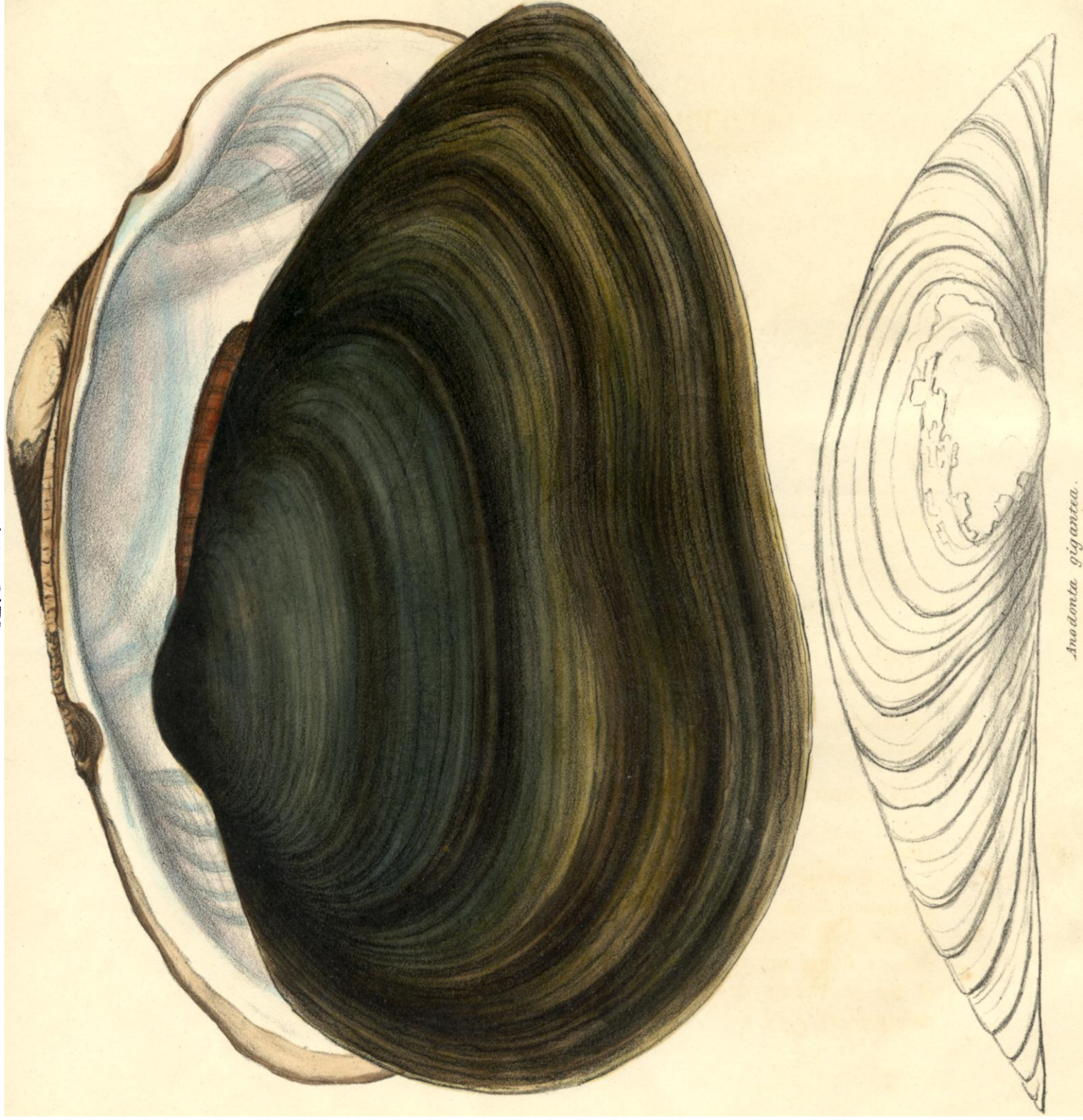
Shell ovate, inflated, broad before, angular behind, inequilateral; valves thick; beaks prominent; nacre pearly white.

Hab. near Port Gibson. T. W. Robeson.

My Cabinet.

Diam. 3·3, Length 4·8, Breadth 7·8 inches.

Shell ovate, inflated, broad before, angular behind, inequilateral; substance of the shell thick; beaks prominent, granulate at tip; epidermis dark brown, smooth; anterior and posterior cicatrices both confluent; dorsal cicatrices near the margin anterior to the beaks; cavity of the shell very deep; cavity of the beaks deep; nacre white and richly pearly.



*Anodonta gigantea.*

Drawn by Drayton.

*Remarks.*—A single valve only of this species could be obtained, and that many years ago. Several attempts to procure more have proved abortive, and I now venture from it to establish the species. This valve has a greater area than any of the *Naïades* which I have yet seen, and its capacity is also greater. It differs in outline, as well as in size, from any species yet described, being broader before and more angular behind.

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ANODONTA OVATA. Plate II. fig. 2.

*Testâ ovatâ, subcompressâ, transversâ, inæquilaterali; valvulis subtenuibus; natibus prominulis; margaritâ albâ.*

Shell ovate, somewhat compressed, transverse, inequilateral; valves rather thin; beaks somewhat prominent; nacre white.

Hab. near Marietta, Ohio. Dr Hildreth.

My Cabinet.

Cabinet of Mr Hyde.

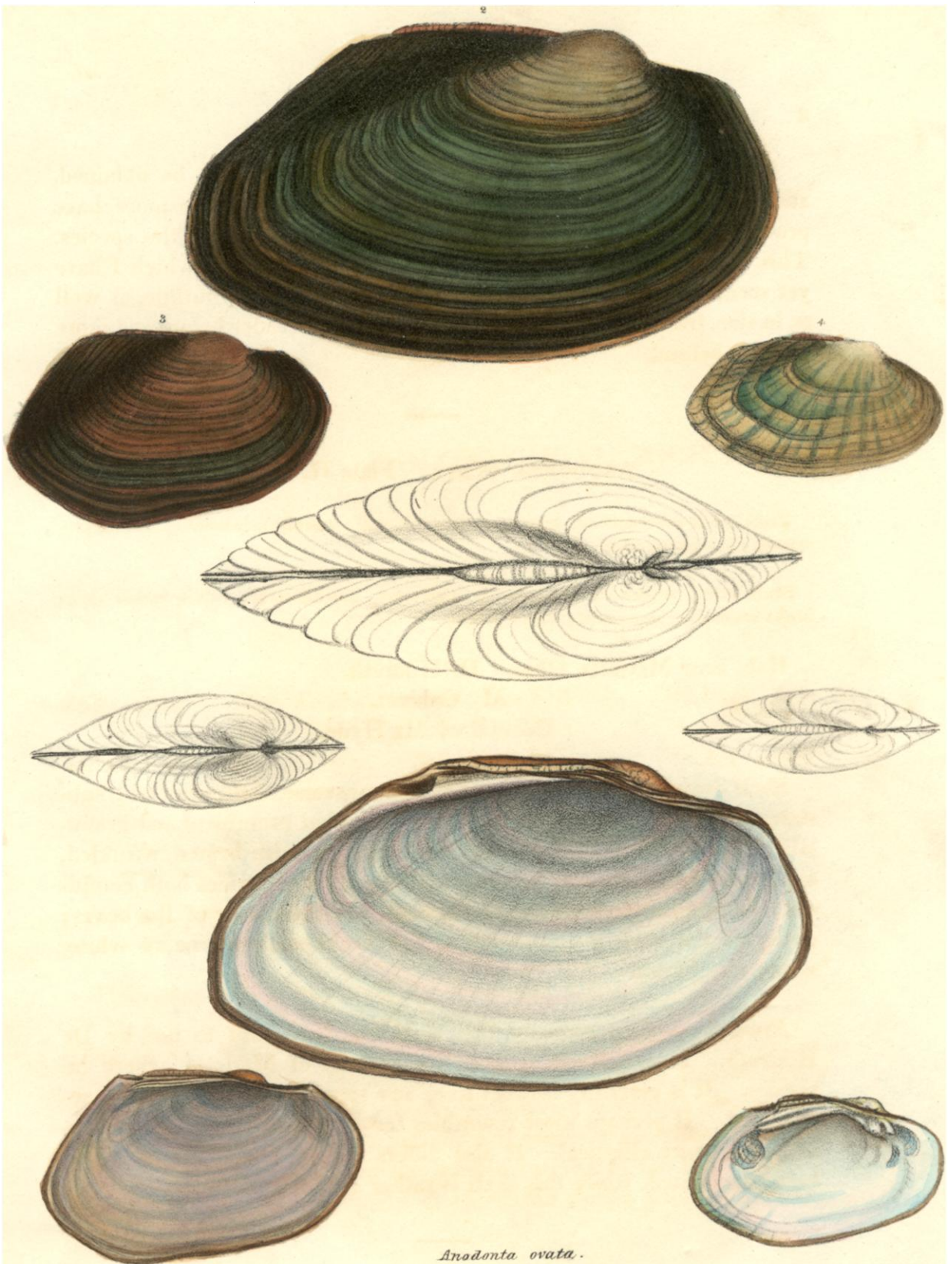
Diam. 1·5,                      Length 2·2,                      Breadth 4 inches.

Shell ovate, somewhat compressed, transverse, inequilateral; substance of the shell rather thin; beaks somewhat prominent and granulate at tip; ligament rather short; epidermis greenish brown, wrinkled, apparently without rays; anterior and posterior cicatrices both confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell deep; cavity of the beaks shallow; nacre white, sometimes bluish.

*Remarks.*—Very recently this shell has been sent to me by Dr Hildreth. I presume it is from the vicinity of Marietta, where he resides. It is certainly distinct from any species with which I am acquainted. It perhaps most resembles the *cataracta* (Say), but differs in being more elliptical. It also differs in the beaks, the *cataracta* being undulated, while this shell is rather granulate at tip.

---





*Unio Bengalensis.*

*Anodonta ovata.*

*Unio venustus.*

## UNIO BENGALENSIS. Plate II. fig. 3.

*Testâ ellipticâ, transversâ, inæquilaterali, inflatâ ; valvulis tenuissimis ; natibus minutè undulatis ; dentibus cardinalibus tenuibus et laminatis ; lateralibus sublongis, linearibusque ; margaritâ purpureâ.*

Shell elliptical, transverse, inequilateral, inflated ; valves very thin ; beaks minutely undulated ; cardinal teeth thin and lamellar ; lateral teeth rather long and linear ; nacre purple.

Hab. Bengal. Dr Burrough.

Cabinet of Dr Burrough.

Diam. .8, Length 1.3, Breadth 2.2 inches.

Shell elliptical, transverse, inequilateral, inflated about the umbones ; substance of the shell very thin ; beaks somewhat inflated, beautifully and minutely undulated, the undulations being parallel and oblique to the plane of the disk, and angular on the umbonial slope ; ligament thin and straight ; epidermis reddish brown and obscurely rayed ; cardinal teeth very small, thin, lamellar, and single in both valves ; lateral teeth rather long, linear, slightly divided in the left valve ; anterior and posterior cicatrices indistinct, and both confluent ; dorsal cicatrices small, and placed in the centre of the cavity of the beaks ; palléal impression scarcely perceptible, and remote from the border ; cavity of the shell deep ; cavity of the beaks rounded ; nacre very thin and purple.

*Remarks.*—Among the numerous rare and beautiful shells brought by Dr Burrough from his last voyage, was the single specimen described above. It was purchased in Calcutta, and Dr B. thinks it inhabits the Ganges. It is a very distinct species, and differs in the teeth from all those with which I am acquainted. Without a close examination it might be taken for an *Anodonta*, the teeth being very small and almost linear. In these it resembles somewhat the *Symphynota discoidea* (nobis) and *S. bi-alata* (nobis), but the curve differs, and the lateral tooth of the left valve is distinctly cleft. In the teeth there is certainly a strong approximation to that group which possesses teeth with a simple curve line. In the beaks it is remarkable for the close, parallel undulations, which extend some distance from their apex, and make, by being reflected, quite an acute angle on the umbonial slope.

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UNIO VENUSTUS. Plate II. fig. 4.

*Testâ ellipticâ, transversâ, subcompressâ, luteâ, inæquilaterali; valvulis subtenuibus; natibus vix prominentibus; dentibus cardinalibus parvis; lateralibus subcurvis; margaritâ albâ et iridescente.*

Shell elliptical, transverse, somewhat compressed, yellowish, inequilateral; valves somewhat thick; beaks scarcely prominent; cardinal teeth small; lateral teeth rather curved; nacre pearly white and iridescent.

Hab. Potosi, Missouri. John Perry, Esq.

Cincinnati, Ohio. T. G. Lea.

My Cabinet.

Diam. .5,

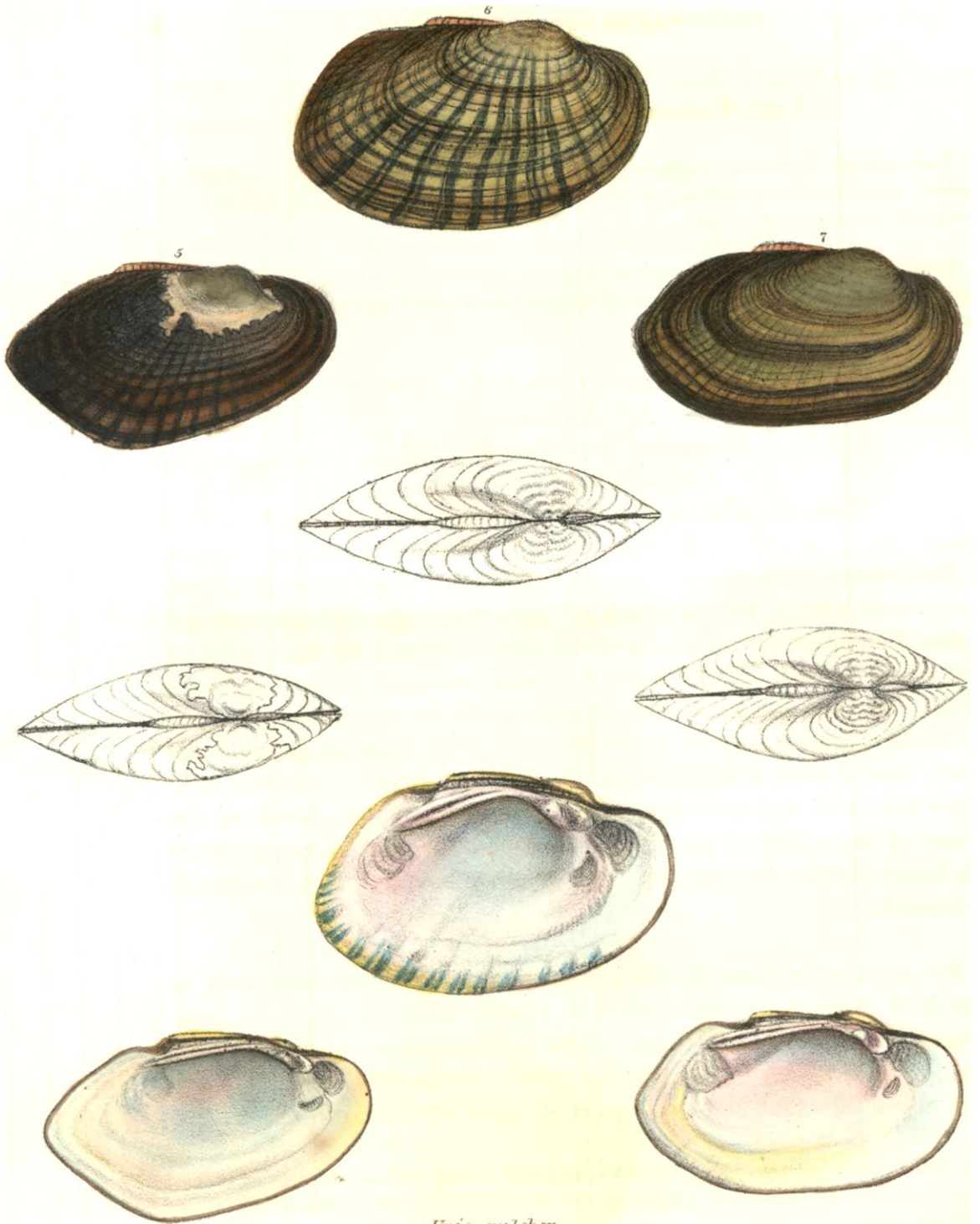
Length 1,

Breadth 1.7 inches.

Shell elliptical, transverse, somewhat compressed, yellowish, inequilateral; substance of the shell somewhat thick; beaks scarcely prominent, pointed at tip, and furnished with very minute undulations; ligament rather short; epidermis yellow, with green, somewhat sinuous rays; cardinal teeth small, elevated, deeply cleft in the left valve; lateral teeth somewhat long, rather curved and enlarged at the posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather shallow; cavity of the beak small and angular; nacre thin behind, pearly white and iridescent.

*Remarks.*—The specimen here figured was sent to me some years since by John Perry, Esq., who obtained it near the lead mines of Potosi, in Missouri. Subsequently my brother, T. G. Lea, has found the species near Cincinnati. As it very strongly resembles a young *U. crassus* (Say), it may very properly be placed in the group of which that species may be considered the type.

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*Unio Vaughanianus.*

*Unio pulcher.*

*Unio obscurus.*



## UNIO VAUGHANIANUS. Plate III. fig. 5.

*Testâ obovatâ, transversâ, subinflatâ, posticé submarginatâ, inæquilaterali; valvulis tenuibus; natibus vix prominentibus; dentibus cardinalibus parvis erectisque; lateralibus rectis; margaritâ salmonis colore tinctâ.*

Shell obovate, transverse, somewhat inflated, subemarginate behind, inequilateral; valves thin; beaks scarcely prominent; cardinal teeth small and erect; lateral teeth straight; nacre salmon colour.

Hab. Sawney's Creek, near Camden, S. C. Professor Ravenel.

My Cabinet.

Cabinet of Professor Ravenel.

Cabinet of Dr Blanding.

*Unio Carolinensis*.\* Professor Ravenel's Letter.

Diam. .7, Length 1.2, Breadth 2 inches.

Shell obovate, transverse, somewhat inflated, enlarged towards the posterior basal margin, behind which it is subemarginate, slightly depressed before the umbonial slope, inequilateral; substance of the shell thin and iridescent behind, thicker and salmon coloured before; ligament rather thin and short; epidermis almost black, and obscurely rayed posteriorly; cardinal teeth double in both valves, small, compressed and erect; lateral teeth straight; anterior cicatrices distinct; posterior cicatrices confluent and scarcely visible; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell deep; cavity of the beaks shallow and angular; nacre salmon coloured and beautifully iridescent.

*Remarks.*—Professor Ravenel very kindly sent me specimens of this shell nearly two years ago, and I owe to Dr Blanding the possession subsequently of others. This species distinctly appertains to that group of which the *U. nasutus* (Say) may be considered the type. It is rayed like that shell, but may at once be distinguished by the

\* This name being preoccupied by Bosc for a shell of this genus, I have considered it necessary to give it another, and propose that of the worthy treasurer of this society, John Vaughan, Esq.

bluntness of the posterior portion of the shell, as well as by its enlargement towards the basal margin.

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UNIO PULCHER. Plate III. fig. 6.

*Testâ ellipticâ, transversâ, subcompressâ, inæquilaterali; valvulis subcrassis; natibus irregulariter undulatis; epidermide luteâ, radiis tenebroso-viridibus; dentibus cardinalibus erectis; lateralibus prope eorum fines majoribus; margaritâ colore caryophylli tinctâ.*

Shell elliptical, transverse, somewhat compressed, inequilateral; valves rather thick; beaks irregularly undulated; epidermis yellow, with dark green rays; cardinal teeth erect; lateral teeth enlarged near their termination; nacre pink coloured.

Hab. near Nashville, Tenn. Professor Troost.

Cabinet of Professor Troost.

Diam. .8,                      Length 1.3,                      Breadth 2.2 inches.

Shell elliptical, transverse, somewhat compressed, inequilateral; substance of the shell rather thick; beaks rather elevated and irregularly undulated; ligament rather long and straight; epidermis yellow; rays dark green, numerous, diverging from the point of the beak over the whole disk; cardinal teeth large, erect, and disposed to be double in both valves, in the left widely cleft; lateral teeth rather long, somewhat curved, enlarged near their termination; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; palleal impression rather indistinct; nacre beautifully pearly and pink coloured.

*Remarks.*—This species belongs to that group of *Uniones* of which the *crassus* of Say is the type. It differs from the *crassus* in being a smaller species, in the undulations of the beaks and in the rays. The pink colour, which is more intense at the region of the teeth, is strikingly beautiful. The rays of this specimen are very dark, and more defined than in any species I have remarked. I am indebted to the great kindness of Professor Troost for the loan of this shell, to describe and figure.

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## UNIO OBSCURUS. Plate III. fig. 7.

*Testâ ellipticâ, transversâ, inæquilaterali, subinflatâ ; valvulis subcrassis ; natibus irregulariter undulatis ; dentibus cardinalibus elevatis ; lateralibus prope eorum fines majoribus ; margaritâ albâ et purpureâ.*

Shell elliptical, transverse, inequilateral, somewhat inflated ; valves rather thick ; beaks irregularly undulated ; cardinal teeth elevated ; lateral teeth larger near their termination ; nacre purple and white.

Hab. near Nashville, Tenn. Professor Troost.

Cabinet of Professor Troost.

Cabinet of Mr Hyde. (White nacre.)

Diam. .8,                      Length 1.1,                      Breadth 2 inches.

Shell elliptical, transverse, inequilateral, somewhat inflated ; substance of the shell rather thick ; beaks slightly elevated and irregularly undulated ; ligament rather short ; epidermis yellowish brown ; rays placed on the posterior part, and somewhat linear ; cardinal teeth double in both valves, erect, crenulate, widely cleft in the left ; lateral teeth rather long, straight, and enlarged near their termination ; anterior cicatrices distinct ; posterior cicatrices confluent ; dorsal cicatrices placed on the inferior part of the lateral teeth ; palleal impression distinct ; nacre white anteriorly, purple posteriorly.

*Remarks.*—I owe to Professor Troost the opportunity of describing this shell. There are no very striking characters in it, but it cannot be classed with propriety with any species which I know. It seems to possess a resemblance to *U. Nashvillianus* (nobis), and to *U. glans* (nobis), two very different species. It is however distinct, and should not be confounded with either. The single specimen here noticed is the only one, I believe, yet found. When more are observed, characters somewhat different may be noticed.

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## UNIO FISHERIANUS. Plate IV. fig. 8.

*Testâ scaleniâ, obliquo-transversâ, compressâ, valde inæquilaterali; valvulis tenuibus; natibus compressis; dentibus cardinalibus lamelliformibus; lateralibus longis subcurvisque; margaritâ purpureâ.*

Shell scaleniform, obliquely transverse, compressed, very inequilateral; valves thin; beaks compressed; cardinal teeth lamellar; lateral teeth long and somewhat curved; nacre purple.

Hab. Head of Chester River, Md. Mr Thomas Fisher.

My Cabinet.

Diam. .6, Length 1.1, Breadth 2.7 inches.

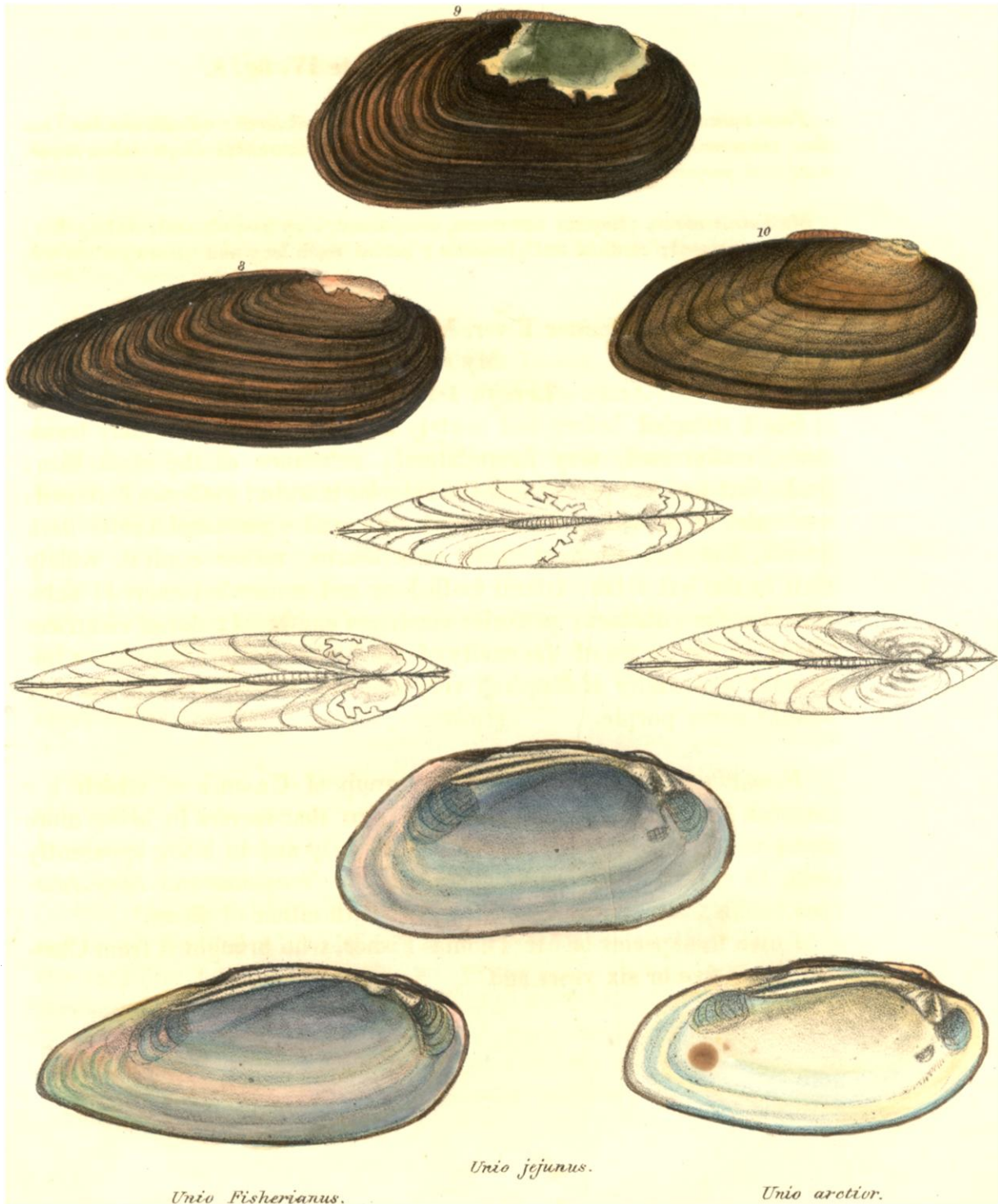
Shell rounded before and acutely angular behind, obliquely transverse, compressed, very inequilateral; substance of the shell thin; beaks flattened and placed near the anterior margin; umbones flattened; umbonial slope elevated; ligament thin and short; epidermis dark brown, smooth; cardinal teeth lamelliform, rather conical, widely cleft in the left valve; lateral teeth long and somewhat curved; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; palleal impression imperceptible; cavity of the shell very shallow; cavity of the beaks very small; nacre purple.

*Remarks.*—This belongs to that group of Uniones of which the *nasutus* (Say) is the type. It differs from that species in being more compressed, in being more angular posteriorly and in being apparently without rays. In outline it approaches the *Grayanus* and *Shepardianus* (nobis), but cannot be confounded with either of them.

I owe this species to Mr Thomas Fisher, who brought it from Chester River five or six years ago.

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*Unio Fisherianus.*

*Unio jejunus.*

*Unio arcticus.*

## UNIO JEJUNUS. Plate IV. fig. 9.

*Testâ suboblongâ, valde transversâ, compressâ, inæquilaterali; valvulis subtenuibus; natis compressis; dentibus cardinalibus parvis; lateralibus longis rectisque; margaritâ vel purpureâ vel albâ.*

Shell somewhat oblong, very transverse, compressed, inequilateral; valves rather thin; beaks compressed; cardinal teeth small; lateral teeth long and straight; nacre purple or white.

Hab. Roanoke.

Also, near Camden, S. C. Dr Blanding.

My Cabinet.

Cabinet of Dr Blanding.

Diam. .5,

Length 1.2,

Breadth 2.5 inches.

Shell somewhat oblong, very transverse, compressed, inequilateral; flattened on the sides; subbiangular behind; substance of the shell rather thin; beaks compressed, scarcely prominent; ligament thin and long; epidermis very dark brown and much wrinkled; cardinal teeth small, double in the left and single in the right valve; lateral teeth long, straight, and enlarged at the posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell very shallow; cavity of the beaks very small; nacre purple or white.

*Remarks.*—In crossing the Roanoke on the mail-route between Winton and Tarborough in 1827, I found a few imperfect specimens of this shell. Last year Dr Blanding had the kindness to give me a more perfect specimen from near Camden, S. C., which confirmed me in my previous impression of its being distinct from any described species. In its general outline and appearance it strongly resembles the *U. complanatus* (Soland.), but is more compressed, and is disposed to be biangular behind.

## UNIO ARCTIOR. Plate IV. fig. 10.

*Testâ angulato-ellipticâ, valde transversâ, compressâ; valvulis subtenuibus; natibus compressis et undulatis; dentibus cardinalibus parvis; lateralibus longis; margaritâ albâ et salmonis colore tinctâ.*

Shell narrow-elliptical, very transverse, compressed; valves rather thin; beaks compressed and undulated; cardinal teeth small; lateral teeth long; nacre white and salmon colour.

Hab. Ohio River, near Cincinnati. T. G. Lea.

My Cabinet.

Cabinet of P. H. Nicklin.

Cabinet of Professor Vanuxem.

Cabinet of William Hyde.

Diam. .7,

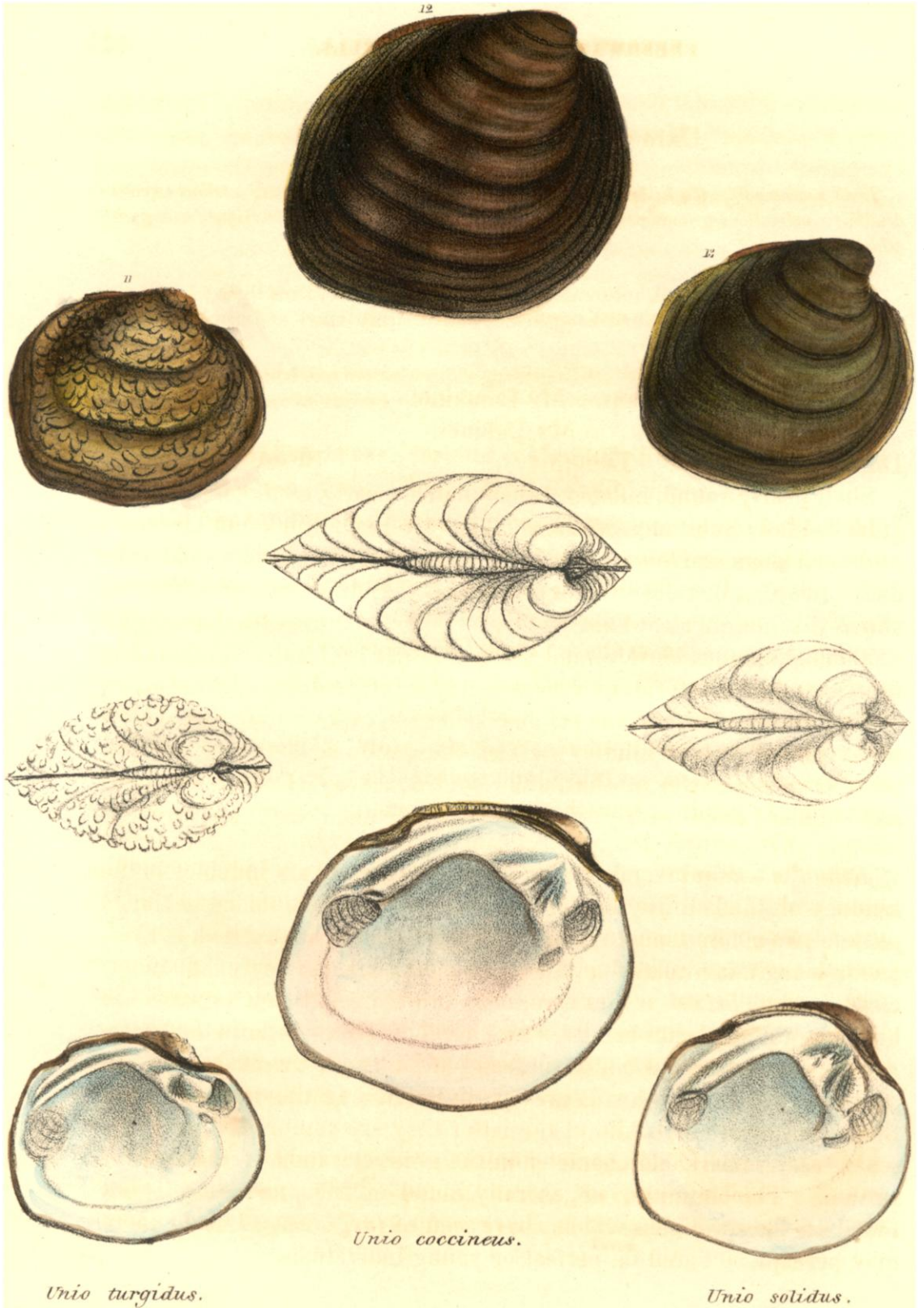
Length 1.1,

Breadth 2.3 inches.

Shell narrow, elliptical, very transverse, subangular behind, flattened on the sides; substance of the shell rather thin; beaks compressed, undulated; ligament rather long and slender; epidermis dark brown, wrinkled; cardinal teeth very small; lateral teeth long, straight, and enlarged at posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices situated on the plate between the cardinal and lateral teeth; cavity of the shell very shallow; cavity of the beak shallow and subangular; nacre white, salmon colour, and sometimes purple.

*Remarks.*—I have for some years been in doubt if this should be separated from the *gibbosus* of Barnes, of which it has generally been considered a variety. After proper examination, believing it to be distinct, I propose to separate it from that species. It certainly very closely resembles the *gibbosus*, but may at once be distinguished by its being a smaller shell, and possessing much less substance. The *gibbosus* is generally purple; this species is usually white or salmon colour, but sometimes purple.

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## UNIO TURGIDUS. Plate V. fig. 11.

*Testâ subrotundâ, inflatâ, tuberculatâ, subæquilaterali; valvulis crassis; natibus elevatis; dentibus cardinalibus grandibus compressisque; lateralibus brevibus subrectisque; margaritâ albâ et iridescente.*

Shell subrotund, inflated, tuberculated, nearly equilateral; valves thick; beaks elevated; cardinal teeth large and compressed; lateral teeth short and nearly straight; nacre white and iridescent.

Hab. near New Orleans. Mr Barabino.

My Cabinet.

Diam. 1,                      Length 1·3,                      Breadth 1·6 inches.

Shell nearly round, inflated, tuberculated, nearly equilateral, subangular behind; substance of the shell thick; beaks thick and elevated; umbonial slope scarcely elevated; ligament short and thick; epidermis dark brown; tubercles small, crowded on the umbones, and sparse towards the margin; cardinal teeth very large, compressed, the anterior section being much elevated and much enlarged; lateral teeth short and nearly straight; anterior cicatrices deeply impressed and distinct; posterior cicatrices distinct, the smaller being scarcely visible; dorsal cicatrices placed on the inferior part of the cardinal tooth; pallear impression deep; cavity of the shell rounded; cavity of the beaks deep and angular; nacre pearly white and iridescent.

*Remarks.*—For several specimens of this species I am indebted to the kindness of the late Mr Barabino. It has more resemblance to the *U. pustulosus* (nobis) than any shell with which I am acquainted, but differs in being more inflated, in the number, size and position of the tubercles. In the *pustulosus* these are large and more frequent towards the basal margin, the beaks being nearly devoid of them, while in the *turgidus* they are numerous on the umbones and towards the beaks. In the cardinal teeth there is a still greater disparity. In the former species these are spread out, while in the latter they are compressed, and present a very remarkable character in the great elevation of the anterior section. The large ray, so generally found on the *pustulosus*, is not found on the specimens which I have seen of *turgidus*. This or more may perhaps be found on perfect or young individuals.

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UNIO COCCINEUS. Plate V. fig. 12.

*Testâ subtriangulari, obliquâ et subcompressâ ; valvulis antice crassioribus ; natibus subelevatis retusisque ; dentibus cardinalibus crassis ; lateralibus crassis et subcurvis ; margaritâ coccineâ.*

Shell subtriangular, oblique and somewhat compressed ; valves thicker anteriorly ; beaks rather elevated and retuse ; cardinal teeth thick ; lateral teeth thick and somewhat curved ; nacre bright red.

Hab. Ohio River, near Marietta. Dr Hildreth.

Mahoning river, Ohio. Dr Kirtland.

Near Columbus, Ohio. Mr Lapham.

My Cabinet.

Cabinet of P. H. Nicklin.

Cabinet of W. Hyde.

Cabinet of Professor Vanuxem.

*Unio coccineus.* Dr Hildreth's letter.

Diam. 1·7,

Length 2,

Breadth 2·2 inches.

Shell subtriangular, oblique, somewhat compressed ; substance of the shell thick anteriorly and thinner posteriorly ; beaks rather elevated, retuse, and possessed of one or two undulations at the apex ; ligament rather long and curved ; epidermis dark reddish brown, with regular distinct marks of growth ; cardinal teeth large, crenate, and deeply cleft in the left valve, and emerging from a pit in the right ; lateral teeth rather long, thick, and somewhat curved ; anterior cicatrices distinct, the great one forming a deep pit ; posterior cicatrices distinct, the smaller one being placed at the end of the lateral tooth ; dorsal cicatrices situated on the inferior part of the cardinal tooth ; cavity of the shell shallow ; cavity of the beaks rather deep and angular ; nacre bright red, sometimes salmon, rarely white.

*Remarks.*—About eighteen months since, Dr Hildreth sent me a single specimen of this species, which he communicated under the name of *coccineus*. I have since received from Dr Kirtland some fine

suites from Poland, Ohio, where they seem to be common. In the interior it resembles *U. pyramidatus* (nobis). It is, however, easily distinguished by its being more compressed, less inflated on the umbones, and in the beaks being less elevated.

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**UNIO SOLIDUS. Plate V. fig. 13.**

*Testâ obliquâ, inflatâque; valvulis crassissimis; natibus elevatis retusisque; epidermide rufo-viridi; dentibus cardinalibus crassis; lateralibus obliquis, brevibusque; margaritâ albâ.*

Shell oblique, inflated; valves very thick; beaks elevated and retuse; epidermis rusty-green; cardinal teeth thick; lateral teeth oblique and short; nacre white.

**Hab. Ohio River, at Cincinnati. T. G. Lea.**

**Mahoning River, Ohio. Dr Kirtland.**

**My Cabinet.**

**Diam. 1·1, Length 1·7, Breadth 1·8 inches.**

Shell oblique, inflated, much enlarged at the umbones; substance of the shell very thick; beaks very much elevated, retuse, and possessed of one or two undulations at the apex; ligament rather short and thick; epidermis rusty-green, and sometimes obscurely rayed; cardinal teeth thick, crenate, and deeply cleft in the left, and emerging from a pit in the right valve; lateral teeth thick, slightly curved and nearly parallel with the line of the cardinal teeth; anterior cicatrices distinct, the great one forming a deep pit; posterior cicatrices distinct, the smaller one being placed at the end of the lateral teeth; dorsal cicatrices situated on the interior of the plate between the cardinal and lateral teeth; cavity of the shell shallow; cavity of the beaks rather deep and angular; nacre pearly white.

*Remarks.*—This species has a strong resemblance to the *U. undatus* (Barnes), and I have only now, after having had several specimens for some years in my possession, satisfied myself, by examining complete suites, of its being specifically different. It may be distinguished by its being more rounded at the basal margin, by its more elevated beaks, by its colour being more green, and, when the rays exist, in their be-

ing more capillary. In the elevation and retuseness of the beaks it resembles the *U. pyramidatus* (nobis), but differs in the depression before the umbonial slope in that shell, and in being white in the nacre, while that species is red. The undulations of the beaks can only be observed when the shell is perfect there, and I have observed it so but in very young individuals.

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**UNIO HYDIANUS. Plate VI. fig. 14.**

*Testâ ellipticâ, transversâ, radiatâ, valde inæquilaterali, subinflatâ; valvulis subcrassis; dentibus cardinalibus elevatis; lateralibus longis, à cardinalibus separatis; margaritâ albâ et iridescente.*

Shell elliptical, transverse, rayed, very inequilateral, somewhat inflated; valves rather thick; cardinal teeth elevated; lateral teeth long and separated from the cardinal teeth; nacre pearly white and iridescent.

**Hab.** Teche River, Louisiana. W. M. Stewart.

Vicinity of New Orleans. Mr Barabino.

My Cabinet.

Cabinet of Mr Stewart.

Cabinet of Mr Hyde.

Diam. 1·1,

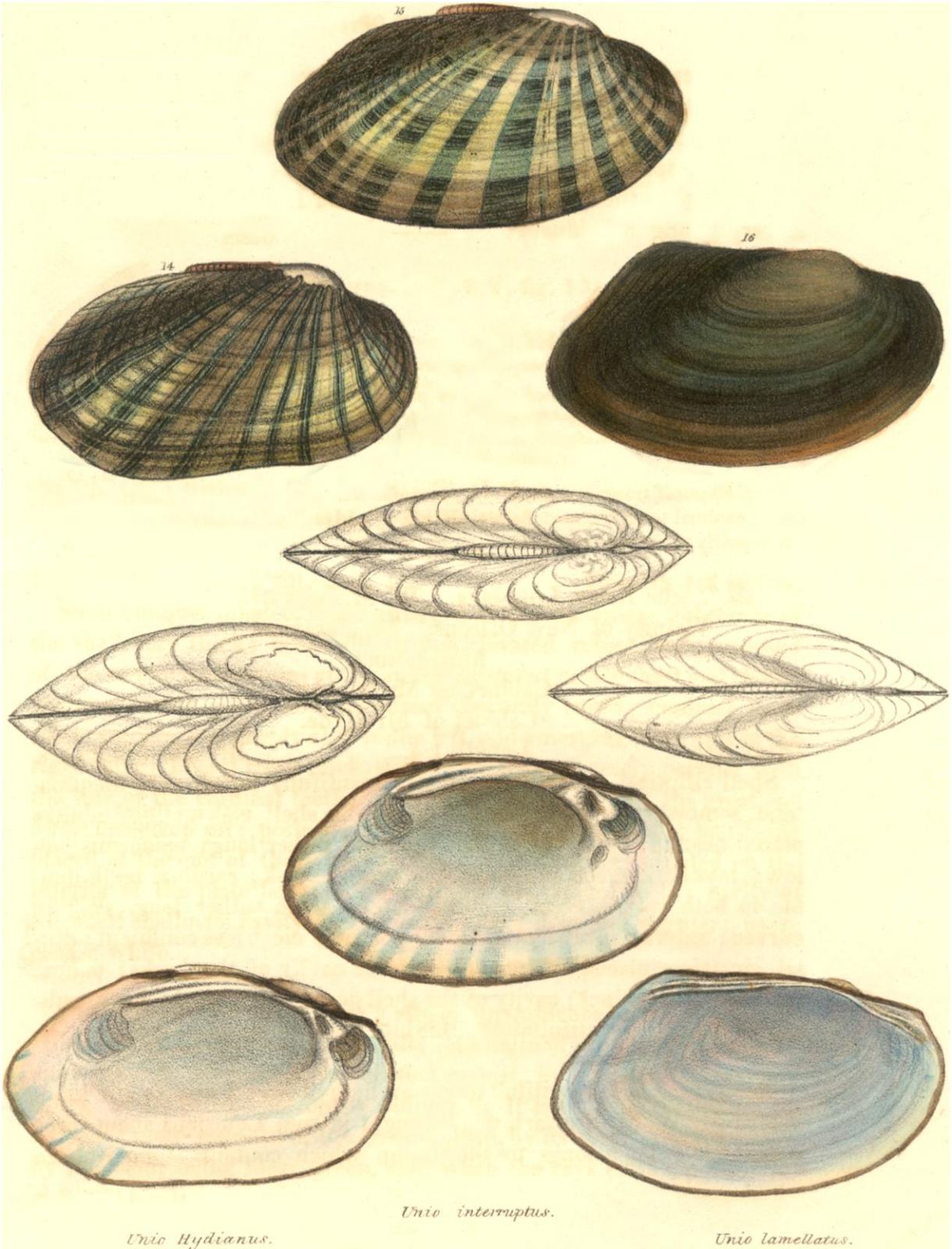
Length 1·4,

Breadth 2·5 inches.

Shell elliptical, transverse, usually beautifully rayed, very inequilateral, somewhat inflated; substance of the shell rather thick; beaks placed near the anterior margin; ligament rather long; epidermis yellow; rays dark green and extending over the disk; cardinal teeth double in both valves, erect, conical; lateral teeth rather long, slightly curved; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; palléal impression indistinct; cavity of the shell deep; cavity of the beaks subangular; nacre beautifully pearly white and iridescent.

**Remarks.** The beautiful specimen figured here I owe to the kindness of Mr W. M. Stewart, who brought it from Louisiana about three years ago. It belongs to the group which contains *Unio radiata*





*Unio Hydianus.*

*Unio interruptus.*

*Unio lamellatus.*

(Gmel.) and *luteola* (Lam.), (*siliquoideus*, Barnes). It perhaps most resembles the latter, but differs in being a smaller shell, in being more pearly, and in having the beaks nearer to the anterior margin. It is generally found rayed, but in some individuals the rays are wanting; none of my specimens have perfect beaks. I have great pleasure in naming it after one of our most experienced conchologists and most assiduous students of this branch of zoology, Mr William Hyde.

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UNIO INTERRUPTUS. Plate VI. fig. 15.

*Testâ ellipticâ, compressâ, transversâ, inæquilaterali; valvulis subcrassis; radiis interruptis; natibus compressis; dentibus cardinalibus parvis; lateralibus longis subcurvisque; margaritâ albâ.*

Shell elliptical, compressed, transverse; inequilateral; valves somewhat thick; rays interrupted; beaks compressed; cardinal teeth small; lateral teeth rather long and curved; nacre white.

Hab. Harpeth River, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .9,                      Length 1.5,                      Breadth 2.6 inches.

Shell elliptical, compressed, transverse, inequilateral, subemarginate on the posterior dorsal margin; substance of the shell somewhat thick; beaks rather prominent, somewhat compressed, undulated about the tip; umbones flattened; ligament rather short; epidermis yellow, rather smooth; rays green, broad, interrupted, radiating to all parts of the margin; cardinal teeth small, conical, deeply cleft in the left valve; lateral teeth long, and somewhat curved, enlarged at posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather shallow; cavity of the beaks small and subangular; nacre pearly white.

*Remarks.*—Two specimens of this beautiful species were sent to me about three years ago, by Professor Troost, of Nashville. Expecting to receive other specimens from him, I deferred making a description, lest they should prove only a variety of *U. crassus* (Say), the young and perfect of which they strongly resemble in many of their characters. The *interruptus* differs in the rays, in the flatness of its sides, and particularly in the undulations of the beaks. The broad interrupted rays of this species are striking, and between them may be usually observed those which are quite capillary. It may be distinguished at once from the *pulcher* (herein described) by its rays, the latter being smaller and not interrupted.

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AMPULLARIA PEALIANA. Plate XXIII. fig. 77.

*Testâ subglobosâ, lævi, solidâ, imperforatâ, luteâ, fasciatâ; spirâ aculâ; anfractibus quinque; aperturâ subovatâ, fasciatâ.*

Shell subglobose, smooth, solid, imperforate, yellow, banded; spire acute; whorls five; aperture subovate, banded.

Operculum horny.

Hab. Turbaco, Colombia, South America. T. R. Peale.

My Cabinet.

Philadelphia Museum.

Diam. 1·1,

Length 1·3 inches.

*Remarks.*—Among the fine collection of rare and beautiful objects in natural history, obtained by Mr Peale during his late journey into Colombia, was this fine *Ampullaria*. The yellow ground of the shell is distinctly marked with rich brown bands, which are visible within. In being imperforate, it resembles the *A. crassa* (Swainson), but differs in being larger, in being more globose, and in having a more effuse outer lip. I dedicate with peculiar pleasure this shell to the discoverer, one of the most enthusiastic and successful cultivators of natural history in our country. Mr Peale found this species in the dry bed of a brook which is devoid of water during half the year.

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**PALUDINA HYALINA. Plate XXIII. fig. 81.**

*Testâ obtuso-conicâ, carinatâ, pellucidâ, infrâ complanatâ ; anfractibus quaternis ; suturis valde impressis ; aperturâ latè rotundatâ.*

Shell obtusely conical, carinate, diaphanous, flattened below ; whorls four ; sutures very much impressed ; aperture widely rounded.

Hab. near Poland, Ohio. Dr Kirtland.

Cabinet of Mr Hyde.

Diam. .2,

Length .2 of an inch nearly.

*Remarks.*—Dr Kirtland sent the only specimen of this shell I have seen to Mr Hyde, under the impression that it was a deformed specimen of *Planorbis*. Mr Hyde communicated it to me as a new species, of which there cannot, I think, be a doubt. It is very remarkable for the flatness of the inferior portion of the last whorl, and for the carina on the periphery which this causes. It is perhaps thinner and more transparent than any species yet described.

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**MELANIA INFLATA. Plate XXIII. fig. 98.**

*Testâ conicâ, inflatâ, tenebroso-corneâ ; apice obtuso ; anfractibus quinis, subconvexis ; columella notatâ ; labro valdè expanso.*

Shell conical, inflated, dark horn-colour ; apex obtuse ; whorls five, rather convex ; columella marked ; outer lip spread out.

Hab. Indian Creek, Vir., West of Alleghany Mountains. P. H. Nicklin.

My Cabinet.

Cabinet of P. H. Nicklin.

Diam. .4,

Length .6 inches.

*Remarks.*—I am indebted to Mr Nicklin for this new species, hav-

ing been found by him in Indian Creek, between the Salt and Red Sulphur Springs. The sinus is so small, that at first view it may easily escape observation. The aperture is large, and in this it has some resemblance to a *Paludina*. Near the base of the columella a purple spot may be usually observed. It resembles most in outline the *M. tuberculata* (nobis), but differs in not being angulated, and being entirely without tubercles. In colour it differs entirely. Some individuals have three coloured purple bands in the interior, while others are devoid of them.

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**PHYSA AUREA. Plate XXIII. fig. 106.**

*Testâ sinistrosâ, subinflatâ, aureâ, pellucidâ; spirâ breviusculâ; anfractibus quaternis; labro marginato; aperturâ subinflatâ.*

Shell sinister, rather inflated, golden colour, pellucid, shining; spire rather short; whorls four; outer lip margined; aperture somewhat inflated.

**Hab.** Hot Spring, Bath county, Virginia. P. H. Nicklin.

My Cabinet.

Cabinet of P. H. Nicklin.

**Diam.** .3,

**Length** .5 inches.

*Remarks.*—Mr Nicklin informed me that he found the *Physa aurea* in a little water-course, by which a hot and a cold spring discharge their mingled waters. The former exhibits a temperature of 106 degrees, and the latter of about 56 degrees of the scale of Fahrenheit.

Near the meeting of the waters, one side of the little stream is cold and the other side hot; and multitudes of these beautiful *Physæ* are to be found on both sides of the line of junction, availing themselves of the power which the locality affords them, of changing their climate according to their fancy.

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*Continuation of Mr Lea's Paper. Read, January 2d, 1835.*

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UNIO LAMELLATUS. Plate VI. fig. 16.

*Testâ subovatâ, transversâ, subinflatâ, nitidâ; valvulis tenuissimis; natibus viz prominulis, undulatis; dentibus cardinalibus longis, tenuibus et laminatis; lateralibus longis, tenuibus subrectisque; margaritâ cœruleâ.*

Shell subovate, transverse, somewhat inflated, shining; valves very thin; beaks scarcely prominent, undulated; cardinal teeth long, thin and lamellar; lateral teeth long, thin and nearly straight; nacre bluish.

Hab. Bengal. Captain Lang.

My Cabinet.

Diam. 1,

Length 1·5,

Breadth 2·6 inches.

Shell subovate, transverse, somewhat inflated, carinate behind; dorsal line nearly straight; substance of the shell very thin; beaks somewhat prominent, with minute undulations following the umbonial slope; umbonial slope furnished with two capillary raised lines, running nearly parallel; ligament rather short; epidermis dark brown and finely polished; rays none; cardinal teeth long, thin, lamellar, single in the *left* valve and double in the *right*; lateral teeth long, thin, and nearly straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices situated nearly in the cavity of the beaks; cavity of the shell somewhat deep; cavity of the beak shallow; nacre bluish.

*Remarks.*—Several specimens of this shell, with the animal, were brought by Captain Lang in his late voyage to Calcutta. In the conformation of the animal I could perceive no difference from that of our common species. It may be considered to be most nearly allied to *U. Corrianus* (nobis). It differs from that shell in its most remarkable character, its cardinal teeth, which are longer and more lamelliform than in any species I am acquainted with. The teeth of this species

are the more interesting, as they present a link approaching those *Naiades* which have a single line under the dorsal margin, and which are connected with this species through the *Symphynota Bengalensis* (nobis). Intervening species may be discovered to make the "nuance" complete.

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**MELANIA PLICATA. Plate XXIII. fig. 95.**

*Testâ subturritâ, plicatâ, castaneâ, tuberculatâ, fasciatâ; suturis impressis; aperturâ ovatâ.*

Shell somewhat turritid, folded, chesnut coloured, tuberculated, banded; sutures impressed; aperture ovate.

Hab. Bengal?

My Cabinet.

Diam. .8,

Length 2 inches.

*Remarks.*—Among numerous freshwater shells brought by Captain Lang from Calcutta, I obtained a single specimen of this species. About one-third the distance below the suture it is furnished with a row of tubercles, each of which terminates a somewhat oblique fold. Inferior to this there is a disposition to carination. The tubercles give the shell slightly the aspect of *M. amarula* (Lam.), but it cannot be mistaken for that species, as its spire is quite elevated. The individual above described being decollated, it is impossible to give the number of whorls, or the character of the apex.

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*Continuation of Mr Lea's Paper. Read, September 18th, 1835.*

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## GENUS MEGASPIRA.

*Testâ clavatâ; aperturâ subovatâ, infernè rotundatâ; marginibus reflexis, supernè dis-junctis; columellâ pluriplicatâ, basi integrâ, non effusâ.*

Shell clavate; aperture nearly oval, below rounded; margins reflected, above disjoined; columella many-folded, below entire, not effuse.

*Remarks.*—The genus *Megaspira*\* is proposed for a single species. It is a most curious and interesting shell, and although it is closely analogous to the genera *Bulimus*, *Pupa* and *Auricula* in some of its characters, cannot be with propriety placed in either of them. Unfortunately we know nothing of the animal; but if we may judge from the peculiar form of the shell, it will doubtless be found to differ much from these genera.

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### MEGASPIRA RUSCHENBERGIANA. Plate XXIII. fig. 101.

*Testâ cylindraceo-turritâ, valdè striatâ, subfuscâ, maculis longitudinalibus rufo-fuscis ornatâ, apice consolidatâ; anfractibus tribus et viginti, subplanulatis; spirâ ad apicem obtusiusculâ; columellâ quadruplicatâ; labro reflexo.*

Shell subcylindrical, turrited, thickly striate, brownish, furnished with longitudinal reddish-brown spots, having a solid apex; whorls twenty-three, rather flattened; spire obtuse at the apex; columella with four folds; outer lip reflected.

Hab. Brazil? W. S. W. Ruschenberger, M.D.

My Cabinet.

Diam. .5,

Length 2.5 inches.

\* *μεγας*, magnus, and *σπῖρα*, spira.

*Remarks.*—I owe to the kindness of Dr Ruschenberger, of the United States navy, the interesting and curious specimen above described. It was purchased by him in Rio de Janeiro, its exact habitat being unknown to him, having been kept perfectly secret by the person from whom he obtained it. The remarkable elevation of this shell eminently distinguishes it from any species with which I am acquainted. The lower portion of the mouth is slightly thrown back, and where the lip joins the bottom of the columella, it is reflected on the whorl, forming a false umbilicus. From this point three connected folds pass into the interior of the cavity of the shell, and half way up the columella a larger and better defined fold is placed, which in the front aspect has the appearance of a tooth. The whorls are slightly curved, and the aperture is about one-sixth the length of the shell.

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**PALUDINA PALLIDA. Plate XXIII. fig. 104.**

*Testâ ventricosâ, tenui, pallidâ, lævi; suturis impressis; anfractibus quaternis, convexis; aperturâ subrotundâ.*

Shell ventricose, thin, light horn-colour, smooth; sutures impressed; whorls four, convex; aperture nearly round.

**Hab.** near Cincinnati, Ohio. **T. G. Lea.**

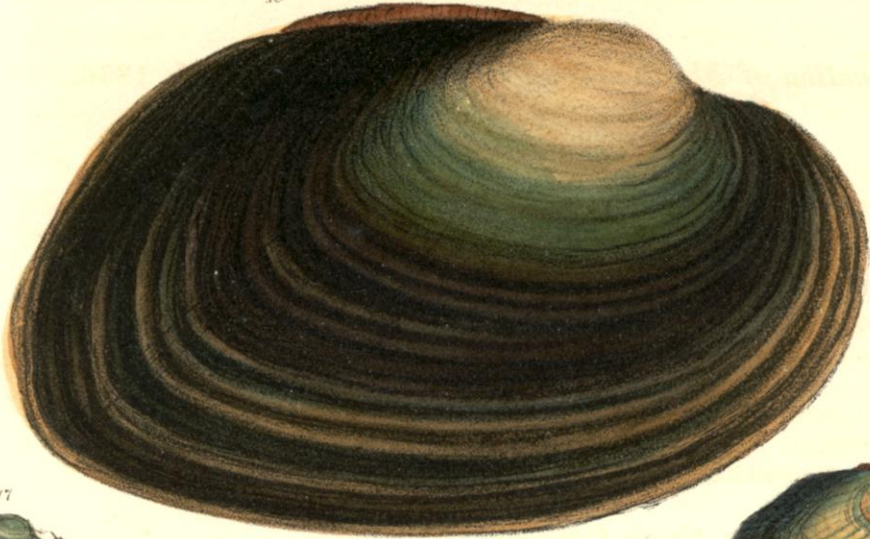
**My Cabinet.**

**Diam.** .3,

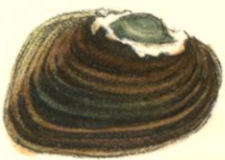
**Length** .4 of an inch.

*Remarks.* This shell has been recently found by my brother, and I believe has not before been observed. It might at first be mistaken for a young shell, on account of its pale yellow colour and translucency. In form, however, it differs from any species I have examined, the last whorl being very much enlarged, and the aperture being very large.

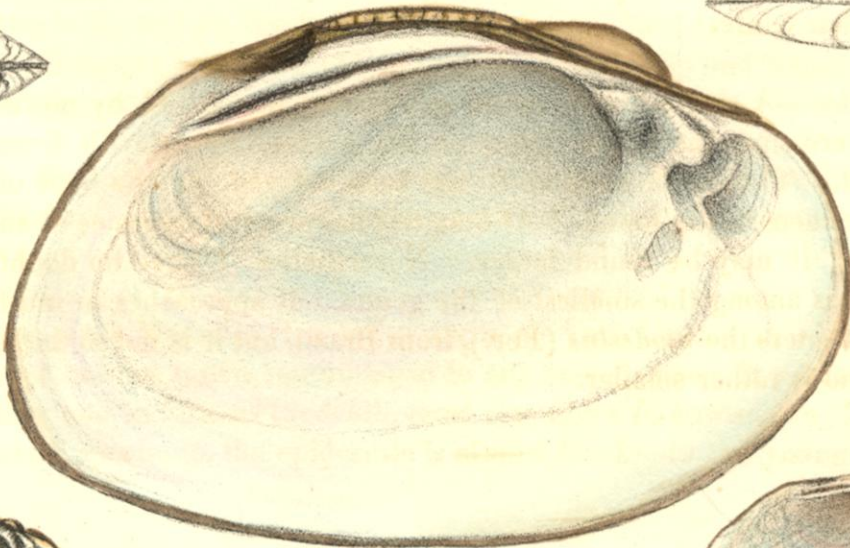
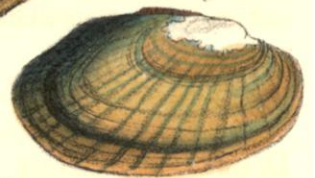
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17



19



*Unio Tampicoensis.*

*Unio pumilus.*

*Unio Cumberlandi* 2.

*Continuation of Mr Lea's Paper. Read, February 5th, 1836.*

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UNIO PUMILUS. Plate VII. fig. 17.

*Testâ subtriangulari, inæquilaterali, posticè subbiangulatâ; valvulis subtenuibus; natibus prominulis; epidermide tenebroso-fuscâ; dentibus cardinalibus grandibus; lateralibus brevibus rectisque; margaritâ albâ.*

Shell subtriangular, inequilateral, behind subbiangular; valves rather thin; beaks somewhat prominent; epidermis dark brown; cardinal teeth large; lateral teeth short and straight; nacre white.

Hab. Black River, North Carolina.

My Cabinet.

Diam. .5,

Length .8,

Breadth 1.1 inches.

Shell subtriangular, inequilateral, behind subbiangular, somewhat carinate; substance of the shell rather thin; beaks somewhat prominent; ligament short; epidermis dark brown, and apparently without rays; cardinal teeth large, and deeply cleft in the left valve; lateral teeth short and straight; anterior cicatrices distinct; posterior cicatrices distinct; dorsal cicatrices situated on the under part of the cardinal teeth; cavity of the shell rather deep; cavity of the beaks angular; nacre bluish white.

*Remarks.*—A single individual of this species was found by me in 1827, in crossing the Black River, on the road to Fayetteville from Smithfield. The publication of it has been delayed, in the hope of other specimens being found. Although it has every appearance of an adult shell, it may be found larger. Nevertheless, I have no doubt but that it is among the smallest of the genus. It approaches in most of its characters the *modestus* (Fer.), from Brazil, but it is not so thick a shell, and is rather smaller.

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UNIO TAMPICOENSIS. Plate VII. fig. 18.

*Testâ ovatâ, inflatâ, transversâ, subcarinatâ, inæquilateralî; valvulis crassis; natibus subprominulis; epidermide nigricante; dentibus cardinalibus magnis; lateralibus longis, subrectis magnisque; margaritâ albâ et iridescente, rarè roseâ.*

Shell ovate, inflated, transverse, subcarinate, inequilateral; valves thick; beaks somewhat prominent; epidermis blackish; cardinal teeth large; lateral teeth long, rather straight and large; nacre white and iridescent, rarely rose coloured.

Hab. River Tampico, Mexico.

River Medellin, Mexico. Dr Burrough.

My Cabinet.

Cabinet of Dr Burrough.

Cabinet of Academy of Natural Sciences.

Diam. 1·7,

Length 2·8,

Breadth 4·3 inches.

Shell ovate, inflated, transverse, subcarinate, inequilateral; substance of the shell thick, thinner behind; beaks somewhat prominent; ligament large and long; epidermis nearly black, and apparently without rays; cardinal teeth large, and deeply cleft in the left valve; lateral teeth long, rather straight, and large; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed across the cavity of the beak, and on the inferior part of the cardinal teeth; cavity of the shell large; cavity of the beaks somewhat deep and angular; nacre white and iridescent, rarely rose colour.

*Remarks.*—The specimen figured here, I owe to the kindness of Richard Ronaldson, Esq., who procured it from the commander of a vessel trading to Tampico. It was brought from some distance above that city. Dr Burrough subsequently procured the same species from the river Medellin, ten miles south of Vera Cruz. It is a fine shell, and has not much resemblance to any one of ours. It perhaps, in outline and in form of the teeth, most resembles *U. crassus* (Say). In the older specimen, the epidermis is almost black—in the younger, it is of

a yellow brown, and in this stage indistinct rays may occasionally be observed. The general colour of the nacre seems to be white, with a disposition to pinkish in the teeth. Sometimes this colour extends over the whole of the thick parts of the nacre, which is very pearly; a tint of salmon colour, in some individuals, may be observed in the cavity of the shell and beaks. The dorsal line in the specimen before me, is slightly tuberculated in an irregular manner.

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UNIO CUMBERLANDICUS. Plate VII. fig. 19.

*Testâ ellipticâ, transversâ, inæquilaterali; valvulis tenuibus; natibus prominulis; epidermide luteâ, radiatâ; dentibus cardinalibus parvis; lateralibus longis rectisque; margaritâ albâ et iridescente.*

Shell elliptical, transverse, inequilateral; valves thin; beaks somewhat prominent; epidermis yellow, radiated; cardinal teeth small; lateral teeth long and straight; nacre white and iridescent.

Hab. Cumberland River, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .5,                      Length .8,                      Breadth 1.5 inches.

Shell elliptical, transverse, inequilateral, umbonial slope rounded; substance of the shell thin, thicker before; beaks somewhat prominent; ligament short; epidermis yellow, with numerous nearly equidistant rays; cardinal teeth small, double in the left valve, and disposed to be bifid in the right; lateral teeth long and straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather shallow; cavity of the beaks small; nacre white, and very iridescent behind.

*Remarks.*—I owe this shell to the kindness of Professor Troost. It most resembles *U. iris* (nobis), and may easily be mistaken for that species. It differs in being less transverse, in being more yellow and in having fewer rays.



**UNIO SIMUS. Plate VIII. fig. 20.**

*Testâ ovatâ, transversâ, compressâ, inæquilaterali, postice subangulatâ; valvulis subcrassis; natibus prominulis; epidermide luteolâ, radiatâ; dentibus cardinalibus parvis; laterali-bus longis crassisque; margaritâ albâ et iridescente.*

Shell ovate, transverse, compressed, inequilateral, subangular behind; valves somewhat thick; beaks somewhat prominent; epidermis somewhat yellow, radiated; cardinal teeth small; lateral teeth long and thick; nacre white and iridescent.

**Hab. Cumberland River, Ten. Professor Troost.**

**My Cabinet.**

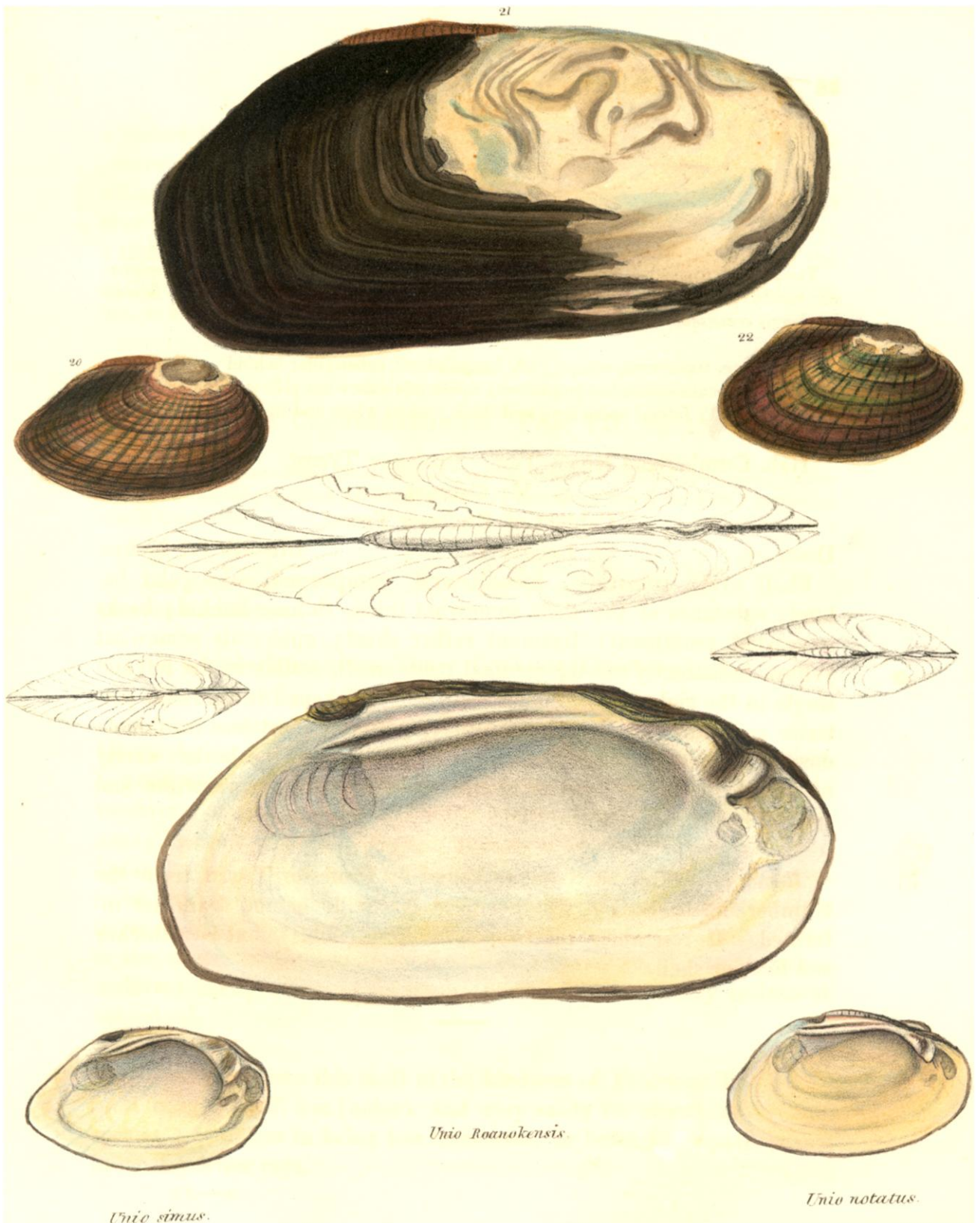
**Cabinet of Professor Troost.**

**Diam. .6,                      Length 1,                      Breadth 1.7 inches.**

Shell ovate, transverse, inequilateral, compressed, subangular behind; substance of the shell somewhat thick, thinner behind; beaks somewhat prominent; ligament rather short; epidermis somewhat yellow, indistinctly rayed; cardinal teeth small, double in the left and single in the right valve; lateral teeth long, thickened towards the posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell shallow; cavity of the beaks angular; nacre white and iridescent behind.

*Remarks.*—This shell was procured by Professor Troost from the Cumberland River, but whether near Nashville or not, I am not informed. It resembles the *Cumberlandicus* (nobis), but is a thicker and heavier shell.

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*Unio sinensis*.

*Unio Roanokensis*.

*Unio notatus*.

## UNIO ROANOKENSIS. Plate VIII. fig. 21.

*Testâ suboblongâ, transversâ, inæquilaterali, posticé biangulatâ, compressâ ; valvulis crassis ; natibus prominulis ; epidermide terebroso-fuscâ ; dentibus cardinalibus parvis ; lateralibus longissimis subcurvisque ; margaritâ albâ.*

Shell somewhat oblong, transverse, inequilateral, biangular behind, compressed ; valves thick ; beaks somewhat prominent ; epidermis dark brown ; cardinal teeth small ; lateral teeth long and rather curved ; nacre white.

Hab. Roanoke River, North Carolina.

Altamaha, Geo. Professor Nuttall and Major Leconte.

My Cabinet.

Cabinet of Major Leconte.

Diam. 1·2, Length 2·2, Breadth 4·7 inches.

Shell somewhat oblong, transverse, inequilateral, biangular behind, compressed, flattened on the umbonial slope ; substance of the shell thick ; beaks somewhat prominent ; ligament very large and long ; epidermis dark brown, apparently without rays ; cardinal teeth small and striate ; lateral teeth long, large, and somewhat curved ; anterior cicatrices distinct ; posterior cicatrices confluent ; dorsal cicatrices on the superior part of the cavity of the beaks ; cavity of the shell small ; cavity of the beak very small ; nacre white.

*Remarks.*—In crossing the Roanoke some years ago, between Norfolk and Tarborough, I picked up a few specimens of this shell. Since that, Professor Nuttall gave me a single valve from the *Altamaha*, and more recently some large specimens have been brought from the same river by Major Leconte. I found at Tarborough several specimens, which I presume to be the young of this species. This shell strongly resembles a gigantic *complanatus*, and may be considered to belong to that group. The nacre of all the specimens, however, which I have seen is white, and filled with deposite of epidermal matter in a clouded manner. It may perhaps be found sometimes purple.

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**UNIO NOTATUS. Plate VIII. fig. 22.**

*Testâ ellipticâ, compressâ, transversâ, inæquilaterali, postice subbiangulatâ ; valvulis tenuibus ; natibus subprominulis ; epidermide rufo-fuscâ, vittatâ ; dentibus cardinalibus parvis ; lateralibus longis subcurvisque ; margaritâ salmonis colore tinctâ et iridescente.*

Shell elliptical, compressed, transverse, inequilateral, behind subbiangular ; valves thin ; beaks rather prominent ; epidermis reddish brown, spotted ; cardinal teeth small ; lateral teeth long and slightly curved ; nacre salmon colour and iridescent.

**Hab. Cumberland River. Professor Troost.**

**Cabinet of Professor Troost.**

**Diam. .6,                      Length 1,                      Breadth 1·8 inches.**

Shell elliptical, compressed, transverse, inequilateral, subbiangular behind ; substance of the shell thin ; beaks somewhat prominent ; ligament rather short ; epidermis reddish brown, with spotted rays over the whole disk ; cardinal teeth small, pointed, and deeply cleft in the left valve ; lateral teeth long and slightly curved ; anterior cicatrices distinct ; posterior cicatrices confluent ; dorsal cicatrices placed in the centre of the cavity of the beaks ; cavity of the shell rather shallow ; cavity of the beaks angular ; nacre salmon colour and very iridescent.

*Remarks.*—Another of the fine shells sent by Professor Troost from Tennessee. In outline it resembles *U. Vanuxemensis* herein described, but is not so thick a shell, and differs in having rays (interrupted), while the other has none. It is also much smaller in the teeth. The individual before me not being perfect in the beaks, I cannot say if the undulations be the same.

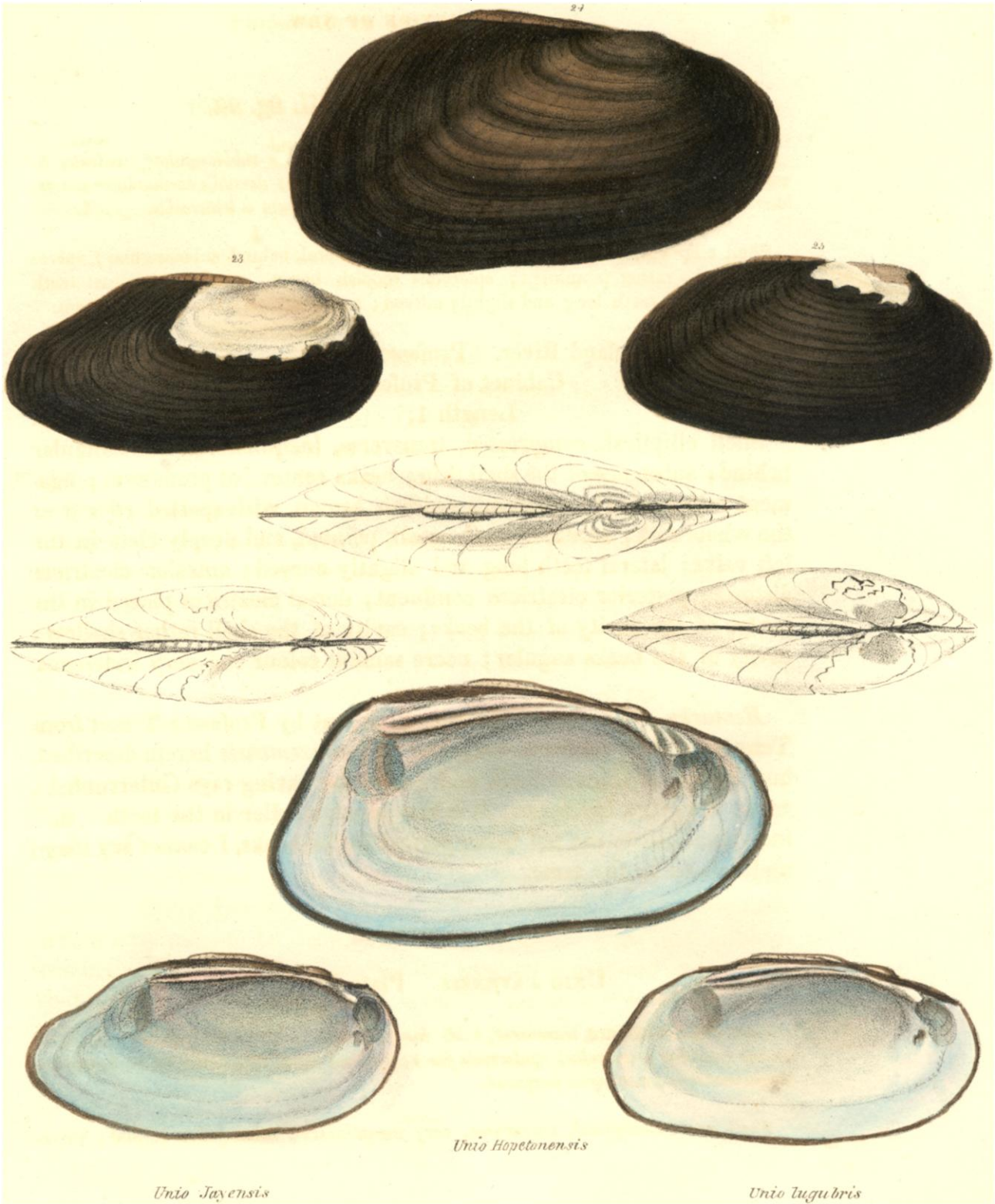
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**UNIO JAYENSIS. Plate IX. fig. 23.**

*Testâ angusto-ellipticâ, transversâ, valdè inæquilaterali, posticè subangulatâ ; valvulis tenuibus ; natibus prominulis ; epidermide fuscâ ; dentibus cardinalibus compressis ; lateralibus longis rectisque ; margaritâ purpureâ.*

Shell narrow-elliptical, transverse, very inequilateral, subangular behind ; valves





*Unio Jayensis*

*Unio Hopetonensis*

*Unio lugubris*

thin; beaks somewhat prominent; epidermis brown; cardinal teeth compressed; lateral teeth long and straight; nacre purple.

Hab. Florida. J. C. Jay, M.D.

My Cabinet.

Diam. .8,

Length 1.2,

Breadth 2.5 inches.

Shell narrow-elliptical, transverse, very inequilateral, subangular behind; subcarinate; substance of the shell thin; beaks somewhat prominent; ligament rather long; epidermis brown, and apparently without rays; cardinal teeth compressed, in the left valve deeply cleft and elevated; lateral teeth long and straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices situated in the centre of the cavity of the beaks; cavity of the shell small; cavity of the beaks small; nacre purple and iridescent.

*Remarks.*—Among other shells for which I am indebted to Dr Jay, were single opposed valves of two individuals of nearly the same size, and for which I propose the name of *Jayensis*. I do not know from what part of Florida they came. This species strongly resembles the *nasutus* (Say), but is not quite so transverse a shell, approaching the *complanatus*. The nacre of both the individuals is of a light purple, bordering on a pinkish tint. In young specimens, it may perhaps be found to possess rays.



#### UNIO HOPETONENSIS. Plate IX. fig. 24.

*Testâ suboblongâ, transversâ, inæquilaterali, compressâ, posticè biangulatâ, ad latus planulatâ; valvulis subcrassis; natibus prominulis, ad apices undulatis; epidermide tenebrososâ; dentibus cardinalibus parvis; lateralibus longis curvisque; margaritâ purpureâ et iridescente.*

Shell somewhat oblong, transverse, inequilateral, compressed, biangular behind, flattened at the sides; valves somewhat thick; beaks scarcely prominent, undulated at the tip; epidermis dark brown; cardinal teeth small; lateral teeth long and curved; nacre purple and iridescent.

Hab. Hopeton, near Darien. Professor Shepard.



## My Cabinet.

## Cabinet of Professor Shepard.

Diam. .9,                      Length 1.7,                      Breadth 3.4 inches.

Shell somewhat oblong, transverse, inequilateral, compressed, biangular behind, flattened at the umbones and sides, carinate; substance of the shell rather thick; beaks scarcely prominent, undulated at the tip; ligament thin, long and straight; epidermis dark brown and obscurely rayed; cardinal teeth small; lateral teeth very long, curved and enlarged at the posterior end; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell rather small; cavity of the beaks small; nacre purple and iridescent.

*Remarks.*—This shell was procured by Professor Shepard from his friend J. H. Cowper, Esq., with several other fine species. They were found in the canals of the rice fields, where they seem to exist in great perfection.

The *Hopetonensis* very closely resembles some of the varieties of *complanatus*. It differs from it in the teeth, in the carina, and in the possession of a dark border round the inferior part of the margin. In the nacre it appears to be the same, and probably, like the *complanatus*, varies into white and salmon colour.

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UNIO LUGUBRIS. Plate IX. fig. 25.

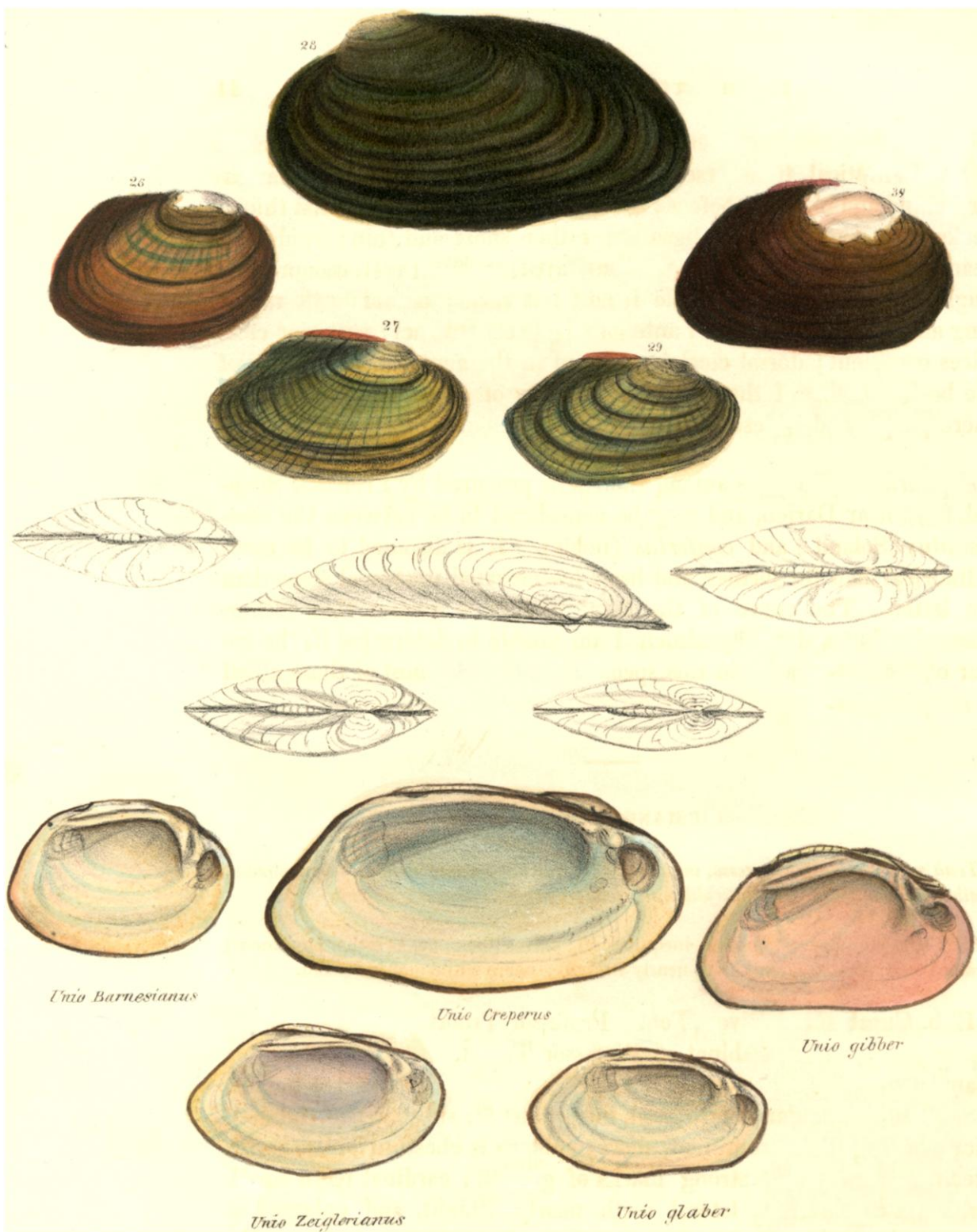
*Testâ ellipticâ, transversâ, subinflatâ, inæquilaterali, posticè biangulatâ; valvulis subcrassis; natibus prominulis; epidermide nigricante; dentibus cardinalibus compressis; lateralibus sublongis subcurvisque; margaritâ purpureâ.*

Shell elliptical, transverse, somewhat inflated, inequilateral, biangular behind; valves somewhat thick; beaks rather prominent; epidermis nearly black; cardinal teeth compressed; lateral teeth rather long and somewhat curved; nacre purple.

Hab. Hopeton, near Darien. Professor Shepard.

My Cabinet.

Cabinet of Professor Shepard.



Diam. .9,                      Length 1.3,                      Breadth 2.5 inches.

Shell elliptical, transverse, somewhat inflated, inequilateral, biangular behind and rounded before; substance of the shell somewhat thick; beaks rather prominent; ligament rather short and thin; epidermis nearly black, and apparently without rays; cardinal teeth compressed, single in the right and double in the left valve; lateral teeth rather long and somewhat curved; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell deep; cavity of the beak rather small; nacre purple and iridescent.

*Remarks.*—This was among the shells procured by Professor Shepard, from near Darien, and may be considered to be between the *complanatus* (Soland.) and *confertus* (nobis). It is disposed to be more cylindrical than the former, and has a less elevated umbonial slope than the latter. The curve of the basal margin is greater than either. Possessing but a single specimen, I am unable to determine if the colour of the nacre varies in this species as it does in most of those allied to *complanatus*.

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UNIO BARNESIANUS. Plate X. fig. 26.

*Testâ subtriangulari, compressâ, inæquilateralî; valvulis crassis; natibus subprominulis; dentibus cardinalibus parvis; lateralibus subrectis; margaritâ albâ et iridescente.*

Shell subtriangular, compressed, inequilateral; valves thick; beaks rather prominent; cardinal teeth small; lateral teeth nearly straight; nacre white and iridescent.

Hab. Cumberland River, Ten. Professor Troost.

Cabinet of Professor Troost.

Diam. .6,                      Length 1,                      Breadth 1.4 inches.

Shell subtriangular, compressed, inequilateral; substance of the shell thick; beaks rather prominent, short; epidermis chestnut brown, with interrupted rays and strong marks of growth; cardinal teeth small, somewhat compressed; lateral teeth nearly straight, and enlarged at the posterior end; anterior cicatrices distinct; posterior cicatrices dis-

tinged; dorsal cicatrices placed on the interior part of the plate between the cardinal and lateral teeth; cavity of the shell small; cavity of the beaks small and angular; nacre pearly white and iridescent.

*Remarks.*—This pretty little species is one of those for which I am indebted to Professor Troost. In its outline it very closely resembles *U. rubiginosus* (nobis). It differs from it, however, entirely in the form and size of its cardinal teeth, and in having green interrupted rays. A single specimen only has come under my observation.

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UNIO ZEIGLERIANUS. Plate X. fig. 27.

*Testâ ellipticâ, transversâ, inæquilaterali, glabrâ; valvulis subcrassis; natibus subprominulis, undulatis; epidermide luteâ, radiatâ; dentibus cardinalibus parvis; lateralibus parvis subrectisque; margaritâ purpureâ et iridescente.*

Shell elliptical, transverse, inequilateral, smooth; valves rather thick; beaks somewhat prominent, undulated; epidermis yellow, radiated; cardinal teeth small; lateral teeth small and nearly straight; nacre purple and iridescent.

Hab. Cumberland River, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .6, Length 1, Breadth 1.6 inches.

Shell elliptical, transverse, inequilateral, smooth, rounded in the umbonal slope; substance of the shell rather thick; beaks somewhat prominent, with fine undulations at the tip; ligament rather short; epidermis yellow, with fine green rays on the posterior portion; cardinal teeth small, deeply cleft in the left valve; lateral teeth small and nearly straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather shallow; cavity of the beaks angular; nacre purple and iridescent.

*Remarks.*—This shell resembles the *U. Muhlfeldianus*, herein described, but may be distinguished at once by its being much smaller,

by being more regularly elliptical, and being smoother and polished. The nacre of *Zeiglerianus*, in several specimens before me, is purple and salmon, some having a white margin. I presume the dominant colour to be purple. I have pleasure in dedicating this shell to F. Zeigler, a distinguished zoologist of Vienna.

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UNIO CREPERUS. Plate X. fig. 28.

*Testâ subellipticâ, transversissimâ, valdè inæquilaterali; valvulis subcrassis; natibus prominulis, undulatis; epidermide viride; dentibus cardinalibus parvis; lateralibus vix cernendis; margaritâ albâ.*

Shell subelliptical, very transverse, very inequilateral; valves somewhat thick; beaks rather prominent and undulated at tip; epidermis greenish; cardinal teeth small; lateral teeth obscure; nacre white.

Hab. Tennessee. Professor Troost.

My Cabinet.

Diam. 1,                      Length 1·4,                      Breadth 2·7 inches.

Shell subelliptical, subemarginate at base, very transverse, very inequilateral, somewhat flattened over the umbones; substance of the shell thick anteriorly, thin and iridescent posteriorly; beaks rather elevated, retuse, and finely undulate at tip; ligament long; epidermis dark green and obscurely rayed; cardinal teeth small and elevated; lateral teeth obscure, being perceptible only at the termination; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell deep; cavity of the beak small; nacre white.

*Remarks.*—I owe to the kindness of Professor Troost the single valve which I possess of this species. It has some resemblance to the *U. emarginatus* (nobis), but perhaps resembles more the *U. iris* (nobis). In the structure of the teeth, particularly in the lateral tooth, the character is obscure. In this it resembles the *U. calceolus* (nobis). At the termination of the ligament there is, however, in my specimen, a

well defined terminal point of the lateral tooth, and in other specimens this may be found to be more developed. The anterior lobe of the cardinal tooth is conical.

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**UNIO GLABER. Plate X. fig. 29.**

*Testâ ellipticâ, transversâ, compressâ, glabrâ, inæquilaterali; valvulis tenuibus; natibus subprominulis, undulatis; epidermide luteâ, radiatâ; dentibus cardinalibus parvis, elevatis; lateralibus longis; margaritâ albâ.*

Shell elliptical, transverse, compressed, smooth and shining, inequilateral; valves thin; beaks somewhat prominent and undulated; epidermis yellow, radiated; cardinal teeth small and elevated; lateral teeth long; nacre white.

Hab. Holston River, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .5,                      Length .8,                      Breadth 1.5 inches.

Shell elliptical, transverse, compressed, polished, somewhat compressed behind, inequilateral, substance of the shell thin, somewhat thicker before; beaks somewhat prominent, with fine, nearly parallel undulations at the tip; ligament short; epidermis smooth, yellow, with numerous fine rays nearly over the whole disk; cardinal teeth small, rather compressed, elevated; lateral teeth long; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks and under the cardinal tooth; cavity of the shell shallow; cavity of the beaks small, angular; nacre white and iridescent.

*Remarks.*—Among the shells brought by Professor Troost from his geological exploration of the eastern part of Tennessee, was this one from the Holston. It is allied to *U. iris* (nobis), but is not so transverse. It differs also somewhat in the rays and beaks, and the epidermis is more yellow. The epidermis is smooth and polished; in these respects it resembles the young of *U. luteola* (Lam.), *siliquoides* (Bar.).



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UNIO GIBBER. Plate X. fig. 30.

*Testâ triangulatâ, compressâ, inæquilaterali, posticè subbiangulatâ; valvulis subcrassis; natibus prominulis; epidermide tenebroso-fuscâ; dentibus cardinalibus parvis; lateralibus declivibus; margaritâ salmonis colore tinctâ.*

Shell triangular, compressed, inequilateral, behind subbiangular; valves rather thick; beaks somewhat prominent; epidermis dark brown; cardinal teeth small; lateral teeth inclined; nacre salmon colour.

Hab. Carryfork River, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .7,                      Length 1,                      Breadth 1.8 inches.

Shell triangular, compressed, inequilateral, behind somewhat biangular, elevated on the dorsal margin; substance of the shell rather thick, thinner behind; beaks somewhat prominent; ligament short; epidermis dark brown, apparently without rays; cardinal teeth small and deeply cleft in the left valve; lateral teeth inclining towards the posterior angle; anterior cicatrices nearly distinct; posterior cicatrices distinct; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell very shallow; cavity of the beaks angular; nacre salmon colour and iridescent behind.

*Remarks.*—Among the numerous interesting species sent to me by Professor Troost, is this species from Carryfork river. In its general character it approaches the *U. crassidens* (Lam.), (*cuneatus*, Bar.). It is, however, a very much smaller shell and more triangular. All the specimens submitted to me (five) were of a fine salmon colour. It may, however, be found to vary, like the *crassidens* and *complanatus*.

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## UNIO VANUXEMENSIS. Plate XI. fig. 31.

*Testâ ellipticâ, compressâ, transversâ, inæquilaterali; valvulis crassis; natibus subprominulis; epidermide tenebroso-fuscâ; dentibus cardinalibus magnis; lateralibus longis subcurvisque; margaritâ salmonis colore tinctâ, et iridescente.*

Shell elliptical, compressed, transverse, inequilateral; valves thick; beaks somewhat prominent; epidermis dark brown; cardinal teeth large; lateral teeth long and somewhat curved; nacre salmon colour and iridescent.

Hab. Cumberland River, Ten. Professor Troost.

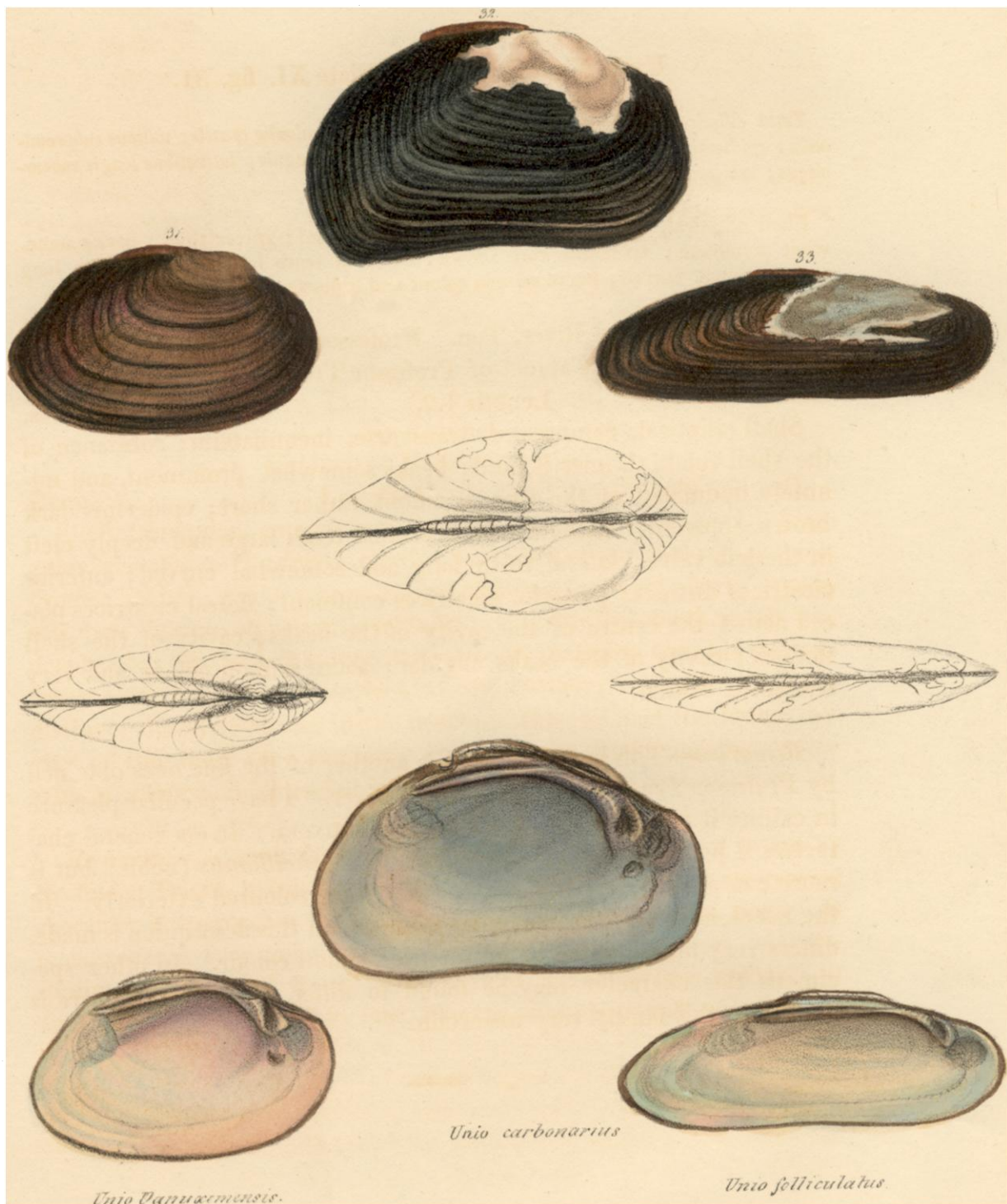
Cabinet of Professor Troost.

Diam. .7, Length 1.2, Breadth 1.9 inches.

Shell elliptical, compressed, transverse, inequilateral; substance of the shell thick, thinner behind; beaks somewhat prominent, and minutely undulated at the tip; ligament rather short; epidermis dark brown, apparently without rays; cardinal teeth large and deeply cleft in the left valve; lateral teeth long and somewhat curved; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed across the centre of the cavity of the beaks; cavity of the shell shallow; cavity of the beaks angular; nacre salmon colour and very iridescent behind.

*Remarks.*—This beautiful shell is another of the fine ones obtained by Professor Troost from Cumberland River. I have peculiar pleasure in calling it after my friend Professor Vanuxem. In its general characters it perhaps most resembles the *U. Nashvillianus* (nobis), but is more compressed, less transverse, and darker coloured exteriorly. In the nacre, however, the specimen from which this description is made, differs very much, being of an intense salmon colour. In other specimens this character may be found to differ, as colour of nacre is usually in this family very uncertain.

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## UNIO CARBONARIUS. Plate XI. fig. 32.

*Testâ subtriangulatâ, tumidâ, transversâ, inæquilaterali, submarginatâ ; valvulis crassis ; natibus subprominulis ; epidermide nigrâ ; dentibus cardinalibus grandiusculis ; lateralibus parvis subcurvisque ; margaritâ purpureâ et iridescente.*

Shell subtriangular, swollen, transverse, inequilateral, subemarginate ; valves thick ; beaks rather prominent ; epidermis black ; cardinal teeth rather large ; lateral teeth small and somewhat curved ; nacre purple and iridescent.

Hab. River Medellin, Mexico. Dr Burrough.

My Cabinet.

Cabinet of Dr Burrough.

Diam. 1·1,

Length 1·4,

Breadth 2·4 inches.

Shell subtriangular, swollen, transverse, inequilateral, subemarginate at the base ; substance of the shell thick, thinner behind ; beaks rather prominent ; epidermis black, apparently without rays ; ligament rather long ; cardinal teeth rather large, double in the left valve ; lateral teeth rather short, and widely separated from the cardinal teeth ; anterior cicatrices distinct ; posterior cicatrices distinct ; dorsal cicatrices placed across the inferior part of the cardinal teeth ; cavity of the shell rather deep ; cavity of the beaks deep and angular ; nacre purple and iridescent behind.

*Remarks.*—The two individuals which I have before me were kindly sent by Dr Burrough, now resident United States consul at Vera Cruz. Ever prompt to promote the study of natural history, in the various climes he visits, he has sent numerous objects from Vera Cruz, with the view of increasing our cabinets and our knowledge.

The *carbonarius* has a stronger affinity to *U. crassidens* (Lam.) than any other species I am acquainted with. It is, however, a smaller shell, with more proportional diameter, and a more intense purple than I have seen in that species. The colour in the only two specimens I have seen, is almost a chocolate, and may be said to resemble the nacre of the *gibbosus* (Bar.). The black exterior and the dark interior, give the shell a very sombre aspect—hence its name.

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UNIO FOLLICULATUS. Plate XI. fig. 33.

*Testá angusto-ellipticá, transversissimá, valdè inæquilaterá, posticè subbiangulatá; anticè rotundatá; ad latera planulatá; valvulis subtenuibus; natibus vix prominulis; epidermide tenebroso-fuscá; dentibus cardinalibus parvis; lateralibus longis subcurvisque; margaritá purpureá et iridescente.*

Shell narrow-elliptical, very transverse, very inequilateral, behind subbiangular, before rounded, flattened at the side; valves rather thin; beaks scarcely prominent; epidermis dark brown; cardinal teeth small; lateral teeth long and somewhat curved; nacre purple and iridescent.

Hab. Savannah River. Major Leconte.

My Cabinet.

Cabinet of Major Leconte.

Diam. .5,                      Length .8,                      Breadth 2.4 inches.

Shell narrow-elliptical, very transverse, very inequilateral, subbiangular behind, rounded before, rather compressed, flattened at the side; substance of the shell rather thin; beaks scarcely prominent; ligament long and curved; epidermis very dark brown; cardinal teeth small and lobed; lateral teeth long and somewhat curved; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell small; cavity of the beak very small; nacre purple and iridescent.

*Remarks.*—I owe the possession of this species to Major Leconte, whose active researches in the rivers of Georgia have produced us several new *Uniones*.

The *folliculatus* is a remarkably transverse shell, and seems to belong to that group of which the *complanatus* (Soland.) may be considered the type. It diverges towards the *Shepardianus* (nobis), but is by no means so transverse a species. The only two specimens which I have seen, are purple inside, which may be considered its general colour. Like the *complanatus*, it may perhaps be found white and salmon coloured.





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UNIO MEDELLINUS. Plate XII. fig. 34.

*Testá ellipticá, transversâ, subcompressâ, inæquilaterali; valvulis subtenuibus; natibus subprominulis; epidermide luteolâ, radiatâ; dentibus cardinalibus parvis; lateralibus longis subcurvisque; margaritâ albâ et iridescente.*

Shell elliptical, transverse, rather compressed, inequilateral; valves somewhat thin; beaks rather prominent; epidermis yellowish, radiated; cardinal teeth small; lateral teeth long and somewhat curved; nacre white and iridescent.

Hab. River Medellin, near Vera Cruz. Dr Burrough.

My Cabinet.

Cabinet of Dr Burrough.

Diam. .7, Length 1.3, Breadth 2.3 inches.

Shell elliptical, transverse; rather compressed, subemarginate at base, inequilateral; substance of the shell rather thin; beaks rather prominent; ligament rather long and slender; epidermis yellowish, with numerous green rays over the whole disk; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell shallow; cavity of the beaks very shallow; nacre white and iridescent.

*Remarks.*—This species was among those sent by Dr Burrough from Vera Cruz. One of the two specimens received is apparently only half grown. The very strong resemblance these specimens bear to *U. radiatus* (Gmelin), has caused me to hesitate in considering the species distinct. The younger individual is more transverse than any specimen of *radiatus* I have seen, and the emargination is a character which that shell does not possess.

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## UNIO LECONTIANUS. Plate XII. fig. 35.

*Testâ ellipticâ, transversâ, inæquilaterali, subinflatâ; valvulis crassis; dentibus cardinalibus parvis; lateralibus longis, à cardinalibus separatis; margaritâ salmonis colore tinctâ.*

Shell elliptical, transverse, inequilateral, somewhat inflated; valves thick; cardinal teeth small; lateral teeth long, being separated from the cardinal teeth; nacre salmon colour.

Hab. Conoochee River, Georgia. Major Leconte.

My Cabinet.

Cabinet of Major Leconte.

Diam. 1·2, Length 1·7, Breadth 2·8 inches.

Shell elliptical, transverse, inequilateral, subbiangular behind, somewhat inflated; substance of the shell thick; beaks slightly elevated; ligament rather short; epidermis yellowish brown and obscurely rayed; cardinal teeth small and deeply cleft in the left valve; lateral teeth long, enlarged at the posterior end, and separated from the cardinal teeth; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices situated on the plate between the cardinal and lateral teeth; cavity of the shell somewhat deep and rounded; cavity of the beak small; nacre salmon colour, approaching to white.

*Remarks.*—Among many other shells from Georgia, which I owe to the kindness of my friend, Major Leconte, I found this species, which I believe has not been before described. It is with great pleasure I dedicate it to him. The *Lecontianus* perhaps most resembles the *crassidens* (Lam.), *cuneatus* (Barnes). It is not so large a shell, and the beak is more medial. The young specimens have distinct rays, and their epidermis is quite yellow. In this state they resemble somewhat the young of *crassus* (Say). The nacre of all the specimens I have seen is salmon colour, and salmon running into white or purple. None of the beaks were sufficiently perfect to observe the form of undulations.

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## UNIO MUHLFELDIANUS. Plate XII. fig. 36.

*Testâ ellipticâ, subcompressâ, transversâ, inæquilaterali; valvulis subcrassis; natibus subprominulis, undulatis; epidermide luteolâ radiatâ; dentibus cardinalibus subparvis erectisque; lateralibus longis rectisque; margaritâ albâ et iridescente.*

Shell elliptical, rather compressed, transverse, inequilateral; valves rather thick; beaks somewhat prominent, undulated; epidermis yellowish, radiated; cardinal teeth rather small and erect; lateral teeth long and straight; nacre white and iridescent.

Hab. Cumberland River, Ten. Professor Troost.

Cabinet of Professor Troost.

Diam. .8, Length 1.3, Breadth 2.3 inches.

Shell elliptical, rather compressed, transverse, inequilateral, rounded before and behind, flattened on the umbonial slope; substance of the shell rather thick before, thinner behind; beaks somewhat prominent, with fine undulations at the tip; ligament long; epidermis yellowish, with dark green rays on the posterior portion; cardinal teeth rather small, erect, and deeply cleft in the left valve; lateral teeth long and straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather deep; cavity of the beaks angular; nacre white and very iridescent behind.

*Remarks.*—The specimen before me was brought from the Cumberland River by Professor Troost, but I do not know from what part of it. It seems to be more closely allied to *U. iris* (nobis) than any species I have seen, but differs in being less transverse, more flattened out behind, and in having the rays more distinct on the posterior portion. I dedicate it to the distinguished custos of the Imperial Museum at Vienna.

A single valve closely resembling this species was sent to me sometime since by my brother, T. G. Lea, from Cincinnati, but it is not sufficiently perfect to decide on its being the same.

**MARGARITANA HOLSTONIA. Plate XIII. fig. 37.**

*Testâ subarcuatâ, subinflatâ, transversâ, valde inæquilaterali; ad latus planulatâ; valvulis subtenuibus; natibus subprominulis, undulatis; epidermide fuscâ; dentibus cardinalibus magnis; margaritâ albâ et iridescente.*

Shell subarcuate, somewhat inflated, transverse, very inequilateral, flattened on the side; valves rather thin; beaks somewhat prominent, undulated; epidermis brown; cardinal teeth large; nacre white and iridescent.

**Hab. Holston River. Professor Troost.**

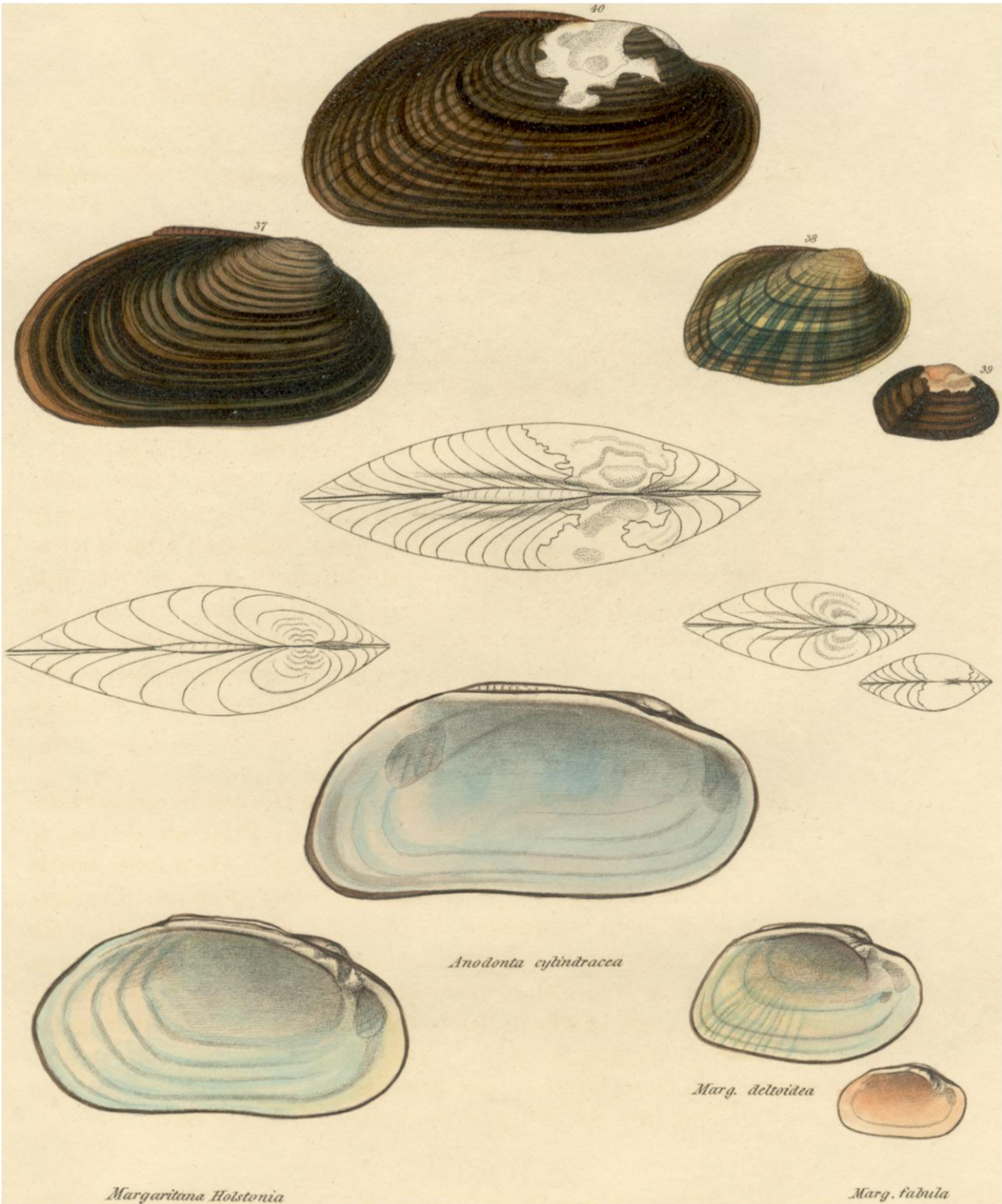
**Cabinet of Professor Troost.**

Diam. .8,                      Length 1.2,                      Breadth 2.4 inches.

Shell subarcuate, somewhat inflated, transverse, very inequilateral, flattened on the side, rounded on the umbonial slope; valves rather thin, thicker before; beaks somewhat prominent, irregularly and finely undulated at the tip; ligament rather long; epidermis brown, wrinkled, and apparently without rays; cardinal teeth large, and elevated into three points in the left valve, smaller in the right valve, and elevated into a single point; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices placed on the inferior portion of the cardinal teeth; cavity of the shell rather deep; cavity of the beak shallow and angular; nacre white and iridescent.

*Remarks.*—This species is the production of Holston River, but I am not aware from what part it was procured by Professor Troost, to whose kindness I owe the privilege of describing it. It is more nearly allied to the *M. Raveneliana* (nobis) than any other species of this genus. It may be distinguished from it by its being more compressed, in the form of its teeth, and in being without rays. The last character must, however, be received with some doubt, as specimens may be found with rays. The single specimen before me having no rays, does not prohibit their occurrence in others. The teeth of the left valve are remarkable in being elevated into three distinct points, the two posterior ones clasping into the cavity of the beak of the other valve.

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**MARGARITANA DELTOIDEA. Plate XIII. fig. 38.**

*Testâ triangulatâ, compressâ, inæquilaterali; valvulis tenuibus; natibus prominentibus, ad apices undulatis; epidermide luteâ, radiatâ; dentibus cardinalibus erectis; margaritâ albâ et iridescente.*

Shell triangular, compressed, inequilateral; valves thin; beaks prominent, undulated at the tip; epidermis yellow, radiated; cardinal teeth erect; nacre white and iridescent.

Hab. Ohio River, near Cincinnati. T. G. Lea.

Scioto. Dr Kirtland.

My Cabinet.

Cabinet of T. G. Lea.

Cabinet of Dr Kirtland.

Diam. .6, Length .9, Breadth 1.4 inches.

Shell triangular, compressed, inequilateral, subemarginate at base; substance of the shell thin behind, thicker before; beaks prominent and strongly undulated at the tip; ligament short and thin; epidermis yellow, with numerous green rays, which are deficient at the beaks; cardinal teeth erect, double in the left valve, single and conical in the right; lateral teeth obsolete; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell not deep; cavity of the beaks rather deep and angular; nacre white and iridescent.

*Remarks.*—This little shell has engaged my attention for some time, having considered it, with a good deal of doubt, a variety of *U. calceolus* (nobis). Like that shell it has a very imperfectly formed lateral tooth; in most individuals it cannot be perceived. In comparison with the *calceolus*, it is more triangular and flattened, and the undulations of the beaks are unbroken. The beaks are of a darker colour, and the anterior lobe of the cardinal teeth seems to be larger in this, while in the other the posterior seems to be the larger. The *deltoidea* is also a smaller shell.

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**MARGARITANA FABULA. Plate XIII. fig. 39.**

*Testâ suboblongâ, transversâ, inæquilaterali, ad basim emarginatâ, ad latus planulatâ; valvulis subcrassis; natibus prominulis; epidermide subviridi; dentibus cardinalibus parvis erectisque; margaritâ salmonis colore tinctâ.*

Shell somewhat oblong, transverse, inequilateral, emarginate at base, flattened on the side; valves somewhat thick; beaks rather prominent; epidermis greenish; cardinal teeth small and erect; nacre salmon colour.

**Hab. Cumberland River, Ten. Professor Troost.**

**My Cabinet.**

**Cabinet of Professor Troost.**

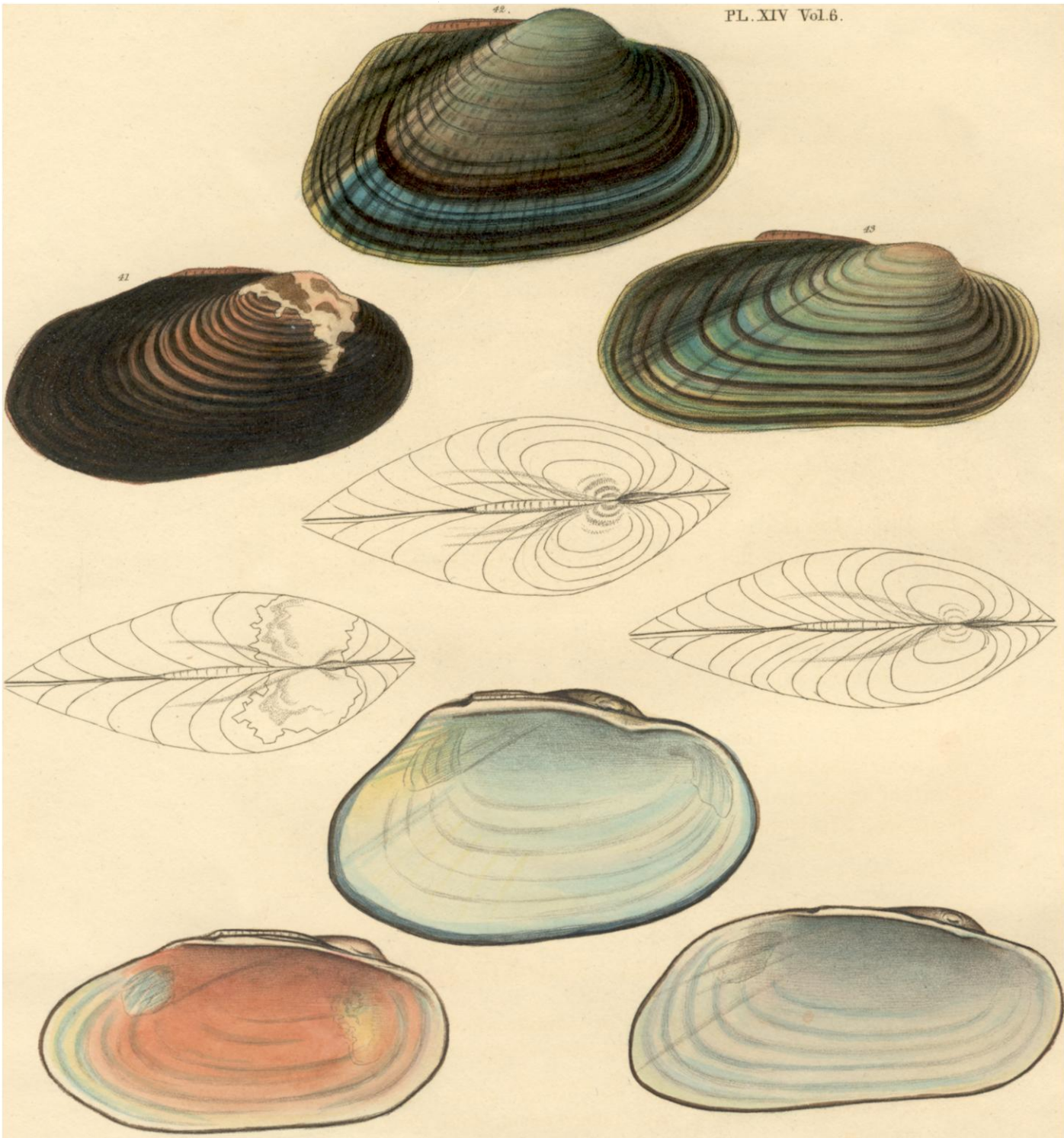
**Diam. .4,                      Length .5,                      Breadth .8 of an inch.**

Shell somewhat oblong, transverse, inequilateral, somewhat inflated, emarginate at base, flattened on the side, raised at the umbonial slope; substance of the shell rather thick, thinner behind; beaks rather prominent; epidermis greenish, with indistinct rays; ligament short; cardinal teeth small and erect; anterior cicatrices confluent; posterior cicatrices distinct; dorsal cicatrices placed on the under part of the cardinal tooth; cavity of the shell deep; cavity of the beaks angular; nacre salmon colour, lighter before.

*Remarks.*—This curious and interesting shell I owe, with many others, to my friend Professor Troost. It is much smaller than any species which has been heretofore described, and does not seem to approach very closely any other species in its general characters. The two specimens which are now before me, the only ones I have seen, are much eroded. This prevents my knowing if the beaks be, in a perfect state, furnished with undulations.

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*Anodonta salmonia*

*Anodonta Wardiana*

*Anodonta Buchanensis*



**ANODONTA CYLINDRACEA. Plate XIII. fig. 40.**

*Testâ cylindraceâ, inflatâ, valdè transversâ, inæquilaterali; valvulis tenuibus; natibus subprominulis; epidermide tenebroso-fuscâ, radiatâ; margaritâ cœruleâ.*

Shell cylindrical, inflated, very transverse, inequilateral; valves thin; beaks somewhat prominent; epidermis dark brown, radiated; nacre blue.

**Hab.** River Medellin, near Vera Cruz. **Dr Burrough.**

**My Cabinet.**

**Cabinet of Dr Burrough.**

**Diam.** .9, **Length** 1·3, **Breadth** 2·3 inches.

Shell cylindrical, inflated, very transverse, inequilateral, flattened on the umbones, subbiangular behind; umbonial slope rounded; substance of the shell thin; beaks somewhat prominent; ligament long and slender; epidermis dark brown, with numerous capillary rays over the whole disk; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices not perceptible; cavity of the shell large; cavity of the beaks small; nacre blue and iridescent.

*Remarks.*—Two specimens only of this were sent by Dr Burrough. The one figured appears to be mature and in a good state; the other is young and imperfect. In outline it differs from any species within my knowledge. In the nacre it somewhat resembles the *A. tenebri-cosa* (nobis), but is a much thinner and more transverse shell. The deposit of epidermal matter in the interior, gives it a very clouded appearance. It is highly iridescent on the posterior portion of the nacre.

**ANODONTA SALMONIA. Plate XIV. fig. 41.**

*Testâ ellipticâ, transversâ, inflatâ, valdè inæquilaterali; valvulis tenuibus; natibus prominulis; epidermide tenebroso-fuscâ; margaritâ colore salmonis tinctâ, infernè cœruleâ.*

Shell elliptical, transverse, inflated, very inequilateral; valves thin; beaks somewhat prominent; epidermis dark brown; nacre salmon colour, bluish along the base.

Hab. near Poland, Ohio. J. P. Kirtland, M.D.

My Cabinet.

Cabinet of Dr Kirtland.

Cabinet of Mr Hyde.

Diam. 1·1, Length 1·4, Breadth 2·7 inches.

Shell elliptical, transverse, inflated, very inequilateral, within salmon colour and usually very rough; substance of the shell thin; beaks somewhat prominent and slightly undulated at the tip; ligament rather short; epidermis dark brown, sometimes with yellow bands; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices indistinct; cavity of the shell deep; cavity of the beaks shallow; nacre bluish along the inferior margin, the interior being usually rough and of a deep salmon colour.

*Remarks.*—I am indebted to Dr Kirtland, of Poland, Ohio, for several specimens of this singular *Anodonta*. It is remarkably characterized in the nacre by the rough or tuberculous deposit of a deep salmon colour. In my specimens this roughness is exhibited most strongly about the anterior cicatrices. In form it most resembles the *A. Ferussaciana* (nobis), but is not quite so cylindrical, and differs altogether in the interior.

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ANODONTA WARDIANA. Plate XIV. fig. 42.

*Testâ ellipticâ, transversâ, subinflatâ, inæquilaterali; clivo umboniali rotundato; valvulis tenuibus; natibus prominentibus, ad apices undulatis; epidermide viridi, radiatâ; margaritâ subcæruleâ.*

Shell elliptical, transverse, somewhat inflated, inequilateral; umbonial slope rounded; valves thin; beaks prominent, undulated at the tip; epidermis green, rayed; nacre bluish.

Hab. near Chilicothe, Ohio. J. C. Ward, M.D.

My Cabinet.

Cabinet of Dr Ward.

Diam. 1·2, Length 1·7, Breadth 3 inches.

Shell elliptical, transverse, somewhat inflated, inequilateral, at the base subemarginate, dorsal margin curved under the beak; umbonial slope rounded; substance of the shell thin; beaks prominent, concentrically undulated at the tip; ligament rather short; epidermis green, disposed to be yellow on the posterior slope and the beaks; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices indistinct; cavity of the shell large; cavity of the beaks angular; nacre bluish.

*Remarks.*—I have from time to time received specimens of this species from Ohio, but I owe the perfect ones, now before me, to Dr Ward, of Chilicothe. Aware of its resemblance to *An. Ferussaciana* (nobis), and *An. areolatus* (Swainson), that gentleman gave particular attention to its habits, and in his letter to me, comparing it to the latter, which it most resembles, he says: "It more nearly resembles a variety of *areolatus* than any other species. It, like that shell, has the strong bend under the beak, which in the *areolatus* is almost a tooth. In habit, it totally differs from *areolatus*. It pierces deeply in the clay and gravel banks, in which it resembles the *An. incerta*, while the *areolatus* is only found in the deep bed of the stream, and is partially uncovered." In the undulations of the beaks, it more resembles the *Ferussaciana*, these being larger in the *areolatus*.

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ANODONTA BUCHANENSIS. Plate XIV. fig. 43.

*Testâ transversâ, inflatâ inæquilaterali, infernè emarginatâ, ad latus planulatâ; clivo umboniali elevato; valvulis tenuibus; natibus prominulis; apicibus undulatis; epidermide subviridi; margaritâ albâ.*

Shell transverse, inflated, inequilateral, emarginate at base; flattened on the side; umbonial slope elevated; valves thin; beaks somewhat prominent, undulated at the tip; epidermis greenish; nacre white.

Hab. Buck Creek, Ohio. R. Buchanan, Esq.  
My Cabinet.

## Cabinet of Mr Buchanan.

Diam. 1·1,

Length 1·3,

Breadth 3 inches.

Shell transverse, inflated, subcylindrical, inequilateral, emarginate at the basal margin, flattened on the sides; umbonial slope elevated and rounded; substance of the shell thin; beaks somewhat prominent and minutely undulated at the tip; ligament rather short and thin; epidermis greenish, darker on the posterior slope; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices indistinct; cavity of the shell deep; cavity of the beaks shallow; nacre white, bluish on the posterior part.

*Remarks.*—I owe to the kindness of R. Buchanan, Esq., a single specimen of this shell. It approaches the *A. Ferussaciana* more nearly than any other of our *Anodontæ* with which I am acquainted. In this individual the beaks are of a bright rusty colour.

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*Continuation of Mr Lea's Paper. Read, July 15th, 1837.*

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HAVING for some years given much attention to the anatomical structure of the *Naiades*, I have arrived at some results which may be deemed important enough to attract the further attention of zoologists, and be of sufficient interest to merit a place in our Transactions.

It is a source of congratulation to those interested in the study of this branch of natural history, to find that a number of naturalists are giving their time to examinations in localities peculiarly and fortunately situated in regard to the number of species, as well as their size, which circumstances tend greatly to facilitate investigations.

Believing that the oviducts would present to us the means of discrimination in some of the species, having found them to be so very dif-

ferent in the *Unio irroratus*,\* my attention had been particularly addressed to these organs in the few and small species of our vicinity.

While engaged in this investigation, I received a communication from Dr Kirtland of Poland, Ohio, an ardent and intelligent student of natural history, in which he informed me of his conviction of being able to distinguish the female and male shells of the same species, without recourse to the included animal. Very shortly after this, his conclusive article on this subject appeared in the American Journal of Science and Arts, Vol. XXVI. It had been a matter of common observation, that individuals of the same species differ very much in the outline of the posterior portion of the shell. In some cases this has been the sole cause of making species, and *apparently* with reason.

It has generally been believed by European naturalists, as well as those of our own country, that these animals were androgynous, a principle so repugnant to nature, that it ought to have excited stronger doubts where the animal structure was so high in the scale of nature, as is the *Naiades*.

My attention now became more addressed to sexual characters, and a very short series of examination satisfied me fully as to the establishment of the difference of sexes.

The female sustaining her very large burden, naturally requires more space within the valves—hence we generally find an enlargement of the posterior portion of the shell, differing in its form in various species.

In the *U. cariosus*, *ochraceus*, *radiatus*, *luteolus*, *occidens*, *purpuratus*, &c., the female is less transverse than the male, being somewhat truncate at the posterior margin, and the greatest diameter is near this portion of the shell. In the species having this distinction, the oviducts will be found to be placed in the posterior portion of the branchiæ. (See Pl. XV., fig. 44, 45, representing the oviducts of *cariosus* and *ochraceus*.) On reference to the figure of *cariosus* (Say), in Nich. Ency. (Am. Edit.) art. Conch. Pl. III., fig. 2, the female character is evident. The *occidens* (nobis), Trans. Am. Phil. Soc., Vol. III. Pl. X., is female; and *purpuratus* (Lam.), *ater* (nobis), Vol. III. Pl.

\* See Vol. III., p. 269.

VII., is undoubtedly such. It may be observed, in each of these figures, that there is an enlargement at the posterior basal margin. This, so far as my knowledge extends, is always indicative of the female character in this form of shells, and this enlargement of the valve corresponds with the position of the charged oviducts. In the *cariosus* I have observed frequently, that the oviducts were so full as to be protruded when the animal was at rest, and when disturbed it retracted them with sluggishness. In a single case of a female *radiatus* which I touched in the river, the oviducts were visibly outside of the line of the shell, and the sudden alarm caused so rapid a closing of the valves as to cut off several of the sacks, which floated away.

There are a few species very remarkable in the shell for a character, which I refer to sex entirely, but never having had the advantage of examining the anatomy of the included animals, I do not present it as an undoubted fact. In my description of *U. arcæformis*, Trans. Am. Phil. Soc., Vol. IV., page 116, I noticed the enlargement and dentate appearance of the posterior margin. In this species, the *brevicens*, *sulcatus*,\* *capillaris*, and *triangularis*,† we find an enlargement to commence at a middle age before or along the umbonal slope, and each mark of growth on this enlargement is disposed to be dentate. In the *brevicens* it is so abrupt as to resemble a large cord on the inferior portion of the valves. In the *arcæformis* it is somewhat flattened and but slightly influences the plane of the margin. In the *capillaris* it is more spread out, but the enlargement and dentition are still very perceptible. One of my specimens of the *sulcatus* presents the dentitions more complete than I have observed in any other species. In all the species where this enlargement takes place, a corresponding groove may be observed in the interior part of the valve. In corroboration of my conclusion, that these are female shells, we have specimens of full growth of undoubtedly the same species which have not the least appearance of an enlargement; and all those which have not attained more than one-third or half their growth never in any case present it.

\* See my remarks, Vol. III., p. 431.

† The male differing so much in form in the posterior part, induced me to think it to be a distinct species, and as such, I described it in Vol. IV., p. 111, under the name of *formosus*. See Plate XVI., fig. 41.

On examining the peculiarity of this structure, we are led to the conclusion, that these grooves are adapted to the enlargement of the oviducts, and I have no hesitation in believing, that when the animal shall be examined, it will be found to be adapted to this structure. In a former memoir, Vol. III. p. 271, I have described the very curious conformation of the oviducts of the *irroratus*. No species which has come under my notice since, presents any thing resembling it. The situation of the oviduct being about the centre of the valve, we do not find that the form of the margin is changed by its sexual character. The *phaseolus* (Hildreth) presents a very peculiar arrangement of the oviducts, resembling no other species which I have examined. The line of the branchiæ being very long, a continued folding of the whole length seems to be necessary. This is accurately represented in Mr Say's "American Conchology," plate 22. In the few female specimens of this species which I have examined, I have not been able to notice a difference of form in the shell from the male.

The females of the *U. perplexus* and *capsæformis*, are distinguished by a remarkable spreading out and extension of the whole of the posterior part of the shell. This very naturally has been taken for a deformity.

So far as I have been able to examine the *Anodontæ*, I have found them to differ in their structure as regards the oviducts. They do not appear to be divided into sacks like the *U. ochraceus*, *cariosus*, &c., but to present an even mass from the anterior to the posterior part. I have examined numerous individuals of the two species, *An. fluviatilis*\* and *undulata* (Say), which exist in our vicinity, and several *Ferussaciana* (nobis), of the western waters which have been sent to me by my brother, T. G. Lea, in a preserved state. The whole lobe of the superior branchiæ being charged with ova, I presume that the *Anodontæ* produce more young than the *Uniones*. In October 1834, I examined a large number of our two species from the Schuylkill, and found the females very much advanced in gestation. The specimens of *fluviatilis* (see Plate XV. fig. 46), apparently, were ready to discharge their burdens. By the pressure of the finger on the side of the oviducts,

\* *Myt. fluviatilis* (Soland.); *An. cataracta* (Say).



the young and perfect shells, lying as closely as possible, came from the orifices at the inferior part of the lobe. This I considered conclusive as regards this species, but I have not been able to decide so satisfactorily as to the mode of the *Uniones* discharging their young. I have been in the habit of keeping many living specimens in water, that I might observe them at convenience, and have placed them so near the surface of the water, in basins, as to examine their oviducts with a good lens. In one case, only, have I seen any discharge, and this was in a good sized *complanatus*, which sent out, while I watched it, perhaps a dozen sacciform oviducts in quite a quick succession. My draughtsman, Mr Drayton, happened to be in my room at the time, and witnessed this operation. Frequently, since that period, I have endeavoured to obtain the same result, but in no case has it recurred. I have, therefore, had my doubts (although I then considered it conclusive) whether it might not have been the effect of accident arising from the unnatural position of the animal—perhaps weakness or approaching dissolution. The *An. undulata* (see Plate XV. fig. 47) seemed nearly ready to spawn. The following observations were made on one which was kept, and opened December 21. The mass of the lobes in this species differs from the *fluviatilis*, in presenting a darker appearance and a very curious arrangement of the oviducts. The ova are placed in a kind of sack which lie across the lobe, presenting one end to the stomach and the other to the mantle of the animal. They lie so close together, as to take the form, on the exterior, like the cells of the honeycomb. This is, of course, caused by pressure. Some of these sacks, when carefully removed, were found to contain as many as twelve ova, each with a perfect living shell in it, having a brownish epidermis.

Fig. *a*, represents a sack with its ova.

Fig. *b*, represents the ovum with its perfect young shell included.

Fig. *c*, represents the honeycomb appearance, and is eight times magnified.

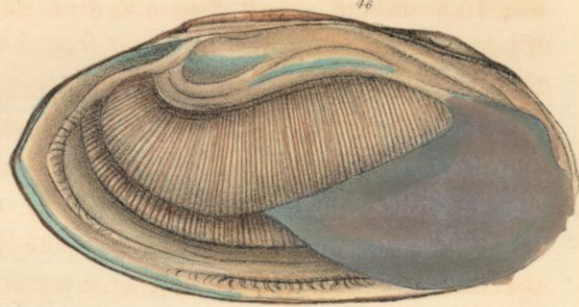
Among the species which I had under examination, were numerous specimens of *U. radiatus*, and, very much to my surprise, I found the females putting on two quite different forms as regards the inferior posterior portion of the mantle.



*Unio ochraceus*



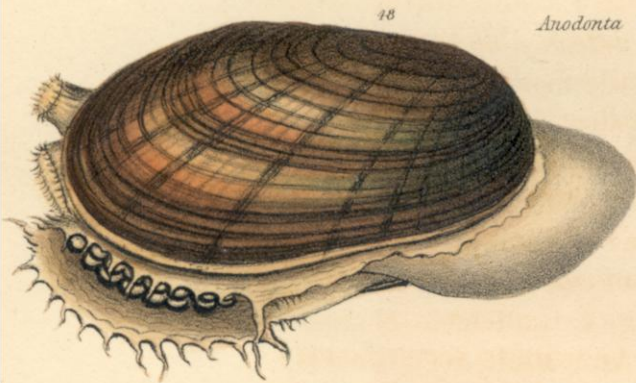
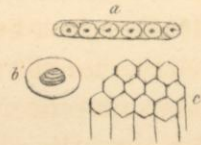
*Unio cariosus*



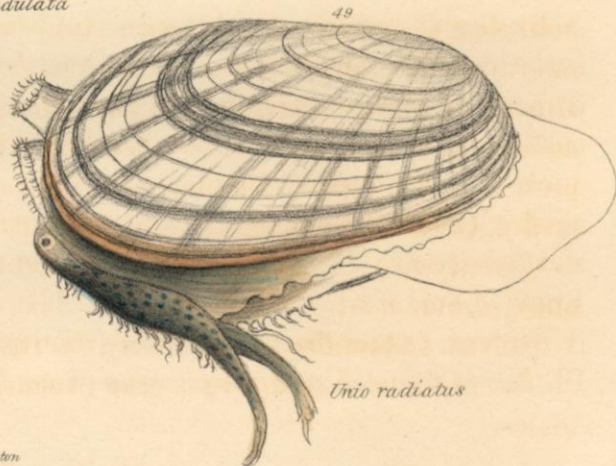
*Anodonta fluviatilis*



*Anodonta undulata*



*Unio radiatus*



*Unio radiatus*

Plate XV., fig. 48, represents a female, with the parts protruded, as she lay at the bottom of a basin of water. The inferior portion of both sides of the sacciform branchiæ are visible, and bordered with black. The fringe of the mantle bordering this portion is furnished with brownish palpi, of one-eighth to three-eighths of an inch long, the two longest being the anterior ones, and opposed to each other. This part of the mantle is in frequent motion, as if in the action of throwing the water on the oviducts.

Plate XV., fig. 49, exhibits a very different apparatus for this part of the mantle. In the place of the palpi, we have a gray, spotted, fleshy ciliate prolongation of the mantle, which terminates in two long flexible feelers, nearly an inch long. At the posterior end of this portion there is a remarkable black spot on each side, surrounded by a white ring, presenting an extraordinary resemblance to an eye.

The difference between these two forms of the same portion of the mantle of the *radiatus* is truly curious. It seems difficult to believe it possible that they should not differ specifically. In the characters of the shells, however, I can find no difference whatever, and no one has, I believe, thought of dividing the *radiatus* of our rivers. Further investigation may throw some light on this apparent deviation in nature, and I trust the attention of the observant naturalist will be given to it. Circumstances have prevented me from following up these examinations, but it is my intention to resume them again.

I had commenced with the examination for sexual character with a good deal of ardour, and intended to have carried this through every month of the year, so far as the seasons permitted. The circumstances alluded to above, prevented the execution of this being as complete as I desired, and I propose to give extracts from my notes, rather than at present to draw conclusions.

Oct. 12, 1834.—I opened a large number of shells from the Schuylkill.

Twenty-five *U. complanatus*. These were all found to be without charged oviducts!!

Eleven *U. nasutus*. Four were found to be females, seven males.

Twenty-four *U. cariosus*. Ten were found to be females, fourteen males.

Twenty-four *U. ochraceus*. Ten were found to be females, fourteen males.

Six *Margaritana undulata*. One was found to be a female, five males.

One *Margaritana marginata*. Sex female.

Four *Anodonta undulata*. One was found to be a female, three males.

Six *Anodonta fluviatilis*. Three proved to be females, three males.

Oct. 23, 1834.—Opened a fine specimen of *Marg. marginata* and found the oviducts forming a lobe like the *An. fluviatilis*, there being no apparent sacks, but the whole mass was largely distended. The foot and surrounding portions were found to be of a salmon colour, as well as the edge of the mantle, which diminishes in intenseness as it approaches the sides and back. The perfect shells could be observed, but they were not so far advanced as to be yet brown.

Opened five specimens of *Marg. undulata*. Only one had charged oviducts, which were found to be similar to the above, but not quite so far advanced. Termination of the foot slightly salmon colour.

Opened two *U. ochraceus*. One male, the other female. The latter fully charged.

Nov. 16, 1834.—Examined three specimens of *U. cariosus*, all obtuse at posterior end.—Found them all fully charged.

Two *U. ochraceus*. Obtuse. Fully charged.

One *U. radiatus*. Obtuse. Fully charged.

One *U. nasutus*. Obtuse. Just commenced to swell on the border of the branchiæ.

Two *U. complanatus*. Both males.

Two *M. undulata*. Both males.

Two *An. fluviatilis*. One male, one female.

Dec. 24, 1834.—Opened the following shells, which had been kept in water some four, some twelve weeks, in the house.

Four *U. cariosus*. One female, three males.

Three *U. complanatus*. All without charged oviducts.

Two *M. marginata*. Without charged oviducts.

Two *M. undulata*. Without charged oviducts.

One *An. undulata*, with reddish charged oviducts, displaying, in a beautiful manner, the honeycomb appearance.

Jan. 18, 1835.—Re-examined a keg of *Naiades*, received from T. G. Lea, two years since. Found *An. Ferussaciana* to be charged in its oviducts like *An. undulata*. One *U. calceolus* partly charged, and one fully charged. One *U. parvus*, thickened along the edge of the oviduct, but did not appear to be perfectly developed. One *An. edentula* was found charged like *An. undulata*.

Jan. 25, 1835.—Opened a large keg from T. G. Lea, taken near Cincinnati. *U. cornutus* was found to differ in its form of the oviducts from other species, the sacks being inclined, and lying parallel to each other, and pendent to the posterior part of the branchiæ only. *U. trigonus*, animal of a deep nearly red colour. *U. Æsopus*, orange colour. *U. cylindricus*, colour pale orange with a blackish line along the lower part of the foot. *U. securis* was found with the oviducts like *cariosus*. *Sym. complanata*, colour fine orange. *U. ovatus*, very like to *cariosus* in the oviducts. *Sym. gracilis*, oviducts like *cariosus*, but much finer and closer. *U. triangularis*, oviducts small and somewhat like *cariosus*, but more oblong and bent in. *U. foliatus* had small oviducts.

*U. clavus*,\* found the animal to be orange colour.

*U. retusus*, has oviducts on the posterior part of the branchiæ only; they resemble those of *cariosus*, but are smaller.

*U. ellipsis*. The oviducts are like *retusus*.

*U. orbiculatus*, has oviducts like *cariosus*.

*U. rectus*, has oviducts close to the posterior end.

March, April, May 1835.—During these months numerous specimens were examined, which confirmed my previous observations.

May 26.—I opened a keg containing various species, from Cincinnati the preceding autumn.

Twenty *An. Ferussaciana*. Seventeen had charged oviducts.

Four *An. incerta* were apparently all males.

\* *Scalenius* ? (Rafinesque).

Three *An. edentula*. All had charged oviducts.

Four *Unio calceolus*. All had charged oviducts.

One *Unio planulatus*. Oviducts charged.

Four *Unio luteolus*. Two with charged oviducts.

Several *Unio crassus*. Only one with charged oviducts.

A few specimens of *multiplicatus*, *tuberculatus*, *asperrimus*, *crassidens*, *alatus*, *gracilis*, &c., proved to be without oviducts; doubtless all being male.

*July 1835.*—During this month examined some fifty or sixty specimens of various species, in none of which did I find the oviducts charged.

*Aug. 11, 1835.*—Received three fine specimens of *U. heterodon* from Mr Clark, of Manayunk. One of these was found to be charged nearly the whole length of the branchiæ with ova. These were so small as to require the microscope to make them out.

*Sept. 6, 1835.*—Opened a specimen of *U. heterodon*, found a few days since in the Schuylkill. The oviducts were charged nearly the whole length of the branchiæ, and the ova very perceptible with the microscope.

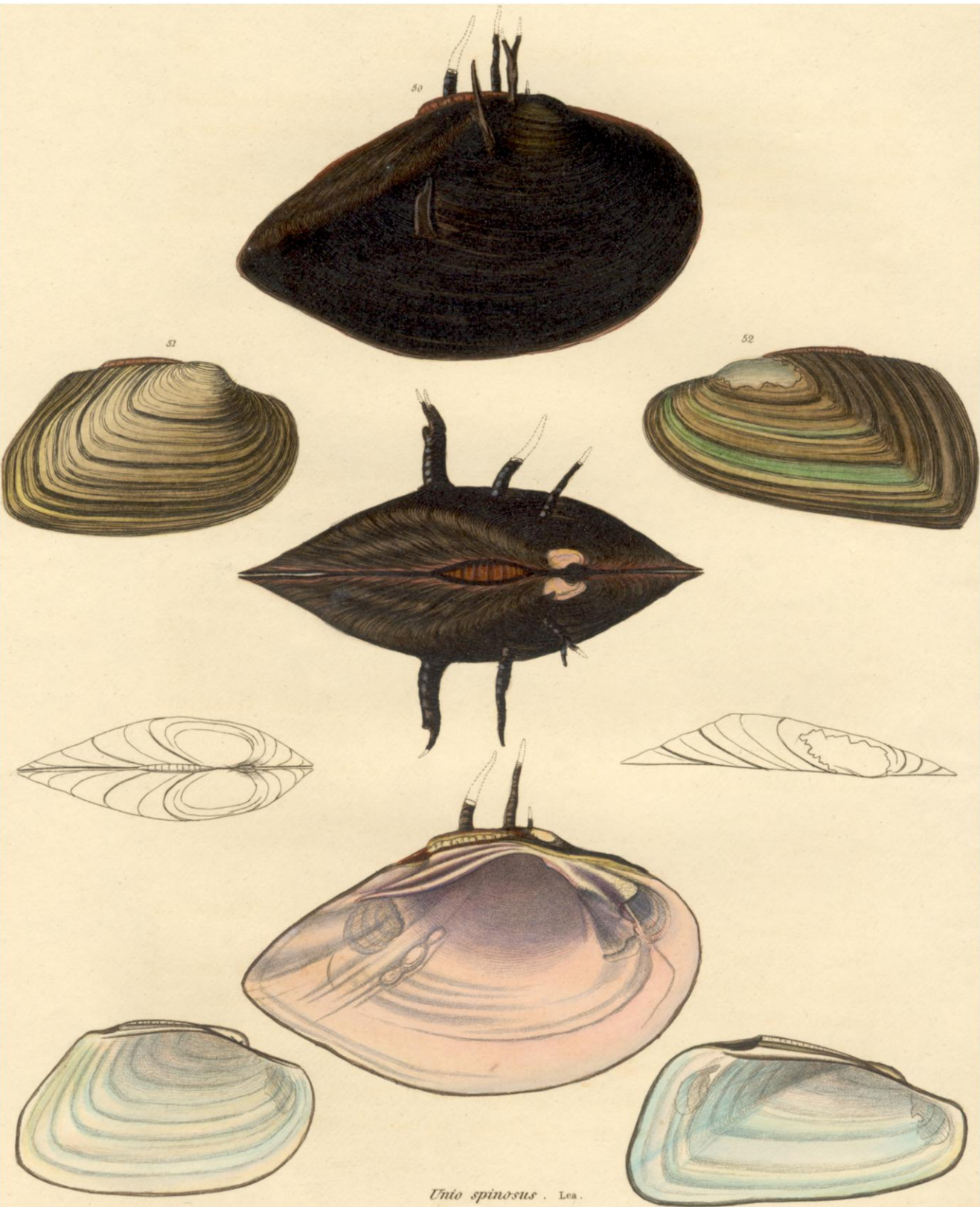
*Sept. 11, 1835.*—Examined another *U. heterodon*, and found it similar to the last mentioned.

*Sept. 13, 1835.*—Opened a number of various species. Found three *An. undulata*, with their oviducts charged, being sufficiently forward to exhibit very plainly their singular position across the lobe of the branchiæ. Also four *Marg. undulata*, with charged oviducts, but by no means in a forward state.

*Dec. 13, 1835.*—Examined a large *Marg. margaritifera*, which proved to be without oviducts. Had a strong dorsal muscular attachment. The palpi along the fringe of the mantle were more grouped than those which I have observed on the *Uniones*. On the branchiæ were spots of a nankin yellow colour, quite consistent, but yielding to the pressure of the knife.

Also a large *Marg. marginata*, nearly three inches in width. This had oviducts filled with minute ova, just perceptible with the microscope. These two fine specimens were taken for me in Crum Creek,





*Anodonta Pepiniacus.*

*Unio spinosus* . Lea .

*Anodonta angulata*



by Dr Griffith. Also examined a *U. radiatus*, with enlarged oviducts, but not sufficiently advanced to observe any ova with a common microscope. Several others examined proved to be males.

June 5, 1836.—Opened an obtuse *U. ochraceus*, with large and full oviducts. The ova only so far progressed as to be visible with the microscope.

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UNIO SPINOSUS. Plate XVI. fig. 50.

*Testâ spinosâ, subtriangulari, inflatâ, inæquilaterali, posticè acuto-angulatâ; valvulis subcrassibus; clivo umboniali carinato; natibus vix prominentibus; epidermide atro-fuscâ, glabrâ; dentibus cardinalibus deorsum inclinantibus; lateralibus subgrandibus subcurvisque; margaritâ purpureâ.*

Shell spinous, subtriangular, inflated, inequilateral, acutely angular behind; valves rather thick; umbonial slope carinate; beaks scarcely prominent; epidermis dark brown, shining; cardinal teeth inclining downwards; lateral teeth rather large and curved; nacre purple.

Hab. Altamaha, Hopeton, near Darien, Geo. James Hamilton Cowper, Esq.

Hab. Altamaha, Liberty County, Geo. Lewis Leconte, Esq.

My Cabinet.

Cabinet of Professor Shepard.

Cabinet of Professor Ravenel.

Cabinet of Major Leconte.

Diam. 1·2,                      Length 1·8,                      Breadth 3·3 inches.  
From tip to tip of fourth pair of spines, 2·6 inches.

Shell spinous, subtriangular, inflated, inequilateral, acutely angular behind; arcuate on the dorsal margin; substance of the shell rather thick, thinner behind; spines erect, opposed in each valve, placed in a row before the umbonial slope and nearly parallel thereto; umbonial slope carinate; beaks scarcely prominent; ligament short and thick; epidermis dark brown, shining, finely wrinkled; cardinal teeth in-

clining downwards, single in the right and double in the left valve, enlarged and truncate at the anterior end; lateral teeth rather large, thickened and curved in the inferior portion; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the inferior part of the cardinal teeth; cavity of the shell deep; cavity of the beaks angular; nacre purple.

*Remarks.*—The genus *Unio* has particularly attracted the attention of naturalists, in the fact of its presenting specimens which resemble many of the genera and species of other families. Thus we have them to resemble an *Arca*, a *Venus*, a *Solen*, a *Modiolus*, &c. The shell described above resembles that which I never expected to see in the *Naiades*, viz. the *Cytherea Dione*! The *Unio spinosus* is certainly the most extraordinary species of this genus which has come under my notice. Having seen but a single specimen, I am not prepared to say that the number of spines is uniform. There are apparently four pairs. I say apparently, for I find no antagonist spine on the right valve opposed to that nearest the tip of the beak. The beak being slightly eroded there, may account for its absence. That which remains on the left valve, nearly a quarter of an inch from the tip of the beak, is only one-tenth of an inch long, but, being fractured, may have been originally much larger. This I call the first pair.

The second pair is placed nearly half an inch from the same point, and the spines directly opposite to each other. That on the left valve is half an inch long, but, being fractured at the apex, most likely was, in a perfect state, one-tenth of an inch longer. At the base it is nearly one-tenth of an inch thick, at the top one-twentieth. That of the right valve is about four-tenths of an inch long, and bifurcates two-thirds of the way up, at an angle of nearly forty degrees, the apex of each branch being fractured.

The spines of the third pair are not exactly opposed to each other, but this I attribute to accidental causes in this specimen. In the left valve the spine is placed nearer to the umbonial slope than those which are next to it, while that of the right valve is further removed from it; consequently neither stand exactly in the line of the row of the whole on each valve. That of the left valve is broken off three-tenths of an inch from its base; that of the right valve is six-tenths of

an inch, and presents the only perfect apex of a spine. This apex is rounded, perfectly smooth, and covered over with epidermal matter.

The fourth pair is nearly three-fourths of an inch from the third, and the spines are much thicker and stronger, and are both rather over half an inch long; that of the left valve bifurcates near the top, and a little lower down there is the rudiment of a third branch; that of the left valve presents no bifurcation, but has the rudiment of a branch at the same height as that of the other valve. All the spines are flattened, the greater diameter being transverse—their upper sides are wrinkled, and particularly those of the inferior pair—their lower sides flattened and smooth. This is exactly what we might expect in the formation of these spines. They are constructed like the tubercles on the nodulous shells and the horns on the *cornutus*. The border of the mantle having deposited the calcareous matter, and the epidermal matter over it, outside of the plane of the shell, where the base of the spine is placed, continues to do this until the apex of the spine is reached. We would then have the larger longitudinal part finished, with its epidermis complete, and the centre would form a kind of channel to the apex. This being reached, the mantle forms the same operation, descending in the lower side, filling up the channel, and covering the deposit with epidermis, and presenting somewhat the appearance of a cicatrix. All the spines which are broken display the remains of the channel, and at first view might be thought to be perforate. This, however, is not the case; the interior of the valves indicating no appearance of the position of the spines, except a little roughness below the last pair.

The teeth of this shell differ in some of their characters from any *Unio* with which I am acquainted. The highest part of the dorsal curve is equidistant from the extreme ends of the two teeth. The cardinal teeth are remarkable for their form and position, being very much enlarged at the anterior end, and pointing to the anterior margin. The lateral teeth are lamellar, and unusually enlarged on the inferior portion—thus forming an inverted curve, the inferior portion of the double lamellar tooth being very much larger than the superior one.

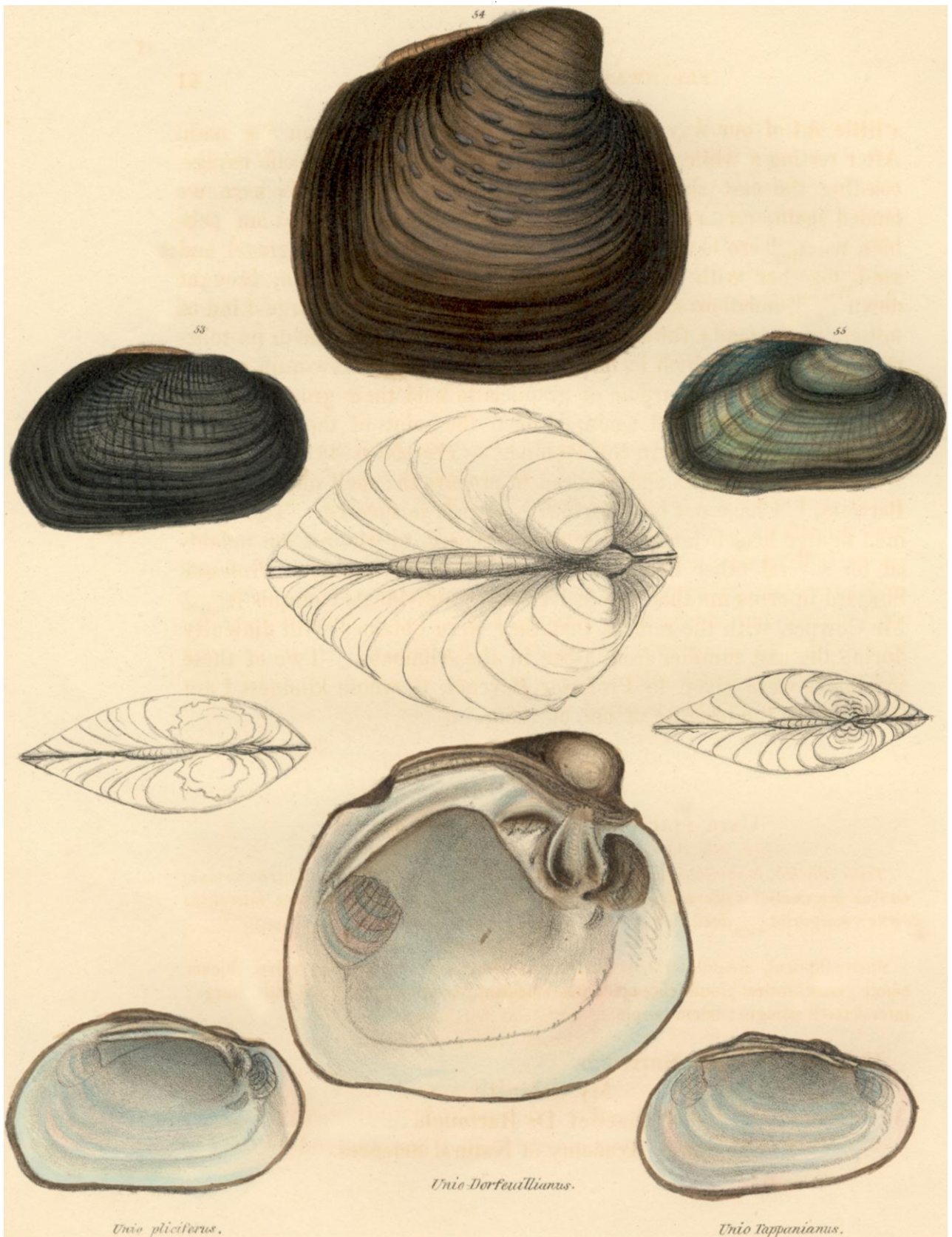
The nacre of the shell is purple, approaching a rose colour, and is very beautiful. The beaks being slightly eroded, renders it unable

to determine if there be any undulations there. I doubt when perfect specimens are found, if there will be any observed.

The above description and observations being made under the disadvantage of the examination of a single specimen only, it is proper to mention that they may not apply to all. It is very probable that some individuals may have no bifurcation of the spines, while others may have all the spines possessing that character. The colour of the nacre may also vary. Professor Shepard informs me that two other specimens, now in the cabinet of Professor Ravenel, were quite imperfect. "One of them had but two (nearly obliterated) pairs of spines, and the other but a single pair. The shells being eroded in the vicinity of the spines, all traces of them had disappeared. The largest specimen was one-third larger than that now sent."

The existence of this curious species was first communicated to me by Major Leconte, in 1830 or 1831, and he then very kindly promised to procure it for me through his brother. In a letter recently received from him, he says, "I first heard of, and in fact saw, a fragment of the *Unio spinosus* in the year 1830, as being found, along with several other species (of which single valves were given to me), in the Altamaha River. Since then my brother (Lewis Leconte) has repeatedly endeavoured to obtain specimens of it, without success, until last winter. He once went to the situation where they are most plentifully found (a distance of fifty miles, and in an almost uninhabited country), but failed in procuring any."\* About two years after Major Leconte first called my attention to this shell, I found that it had been observed by Bartram in his "Travels." In the summer of 1777 he seems to have observed it in the Mississippi. If it be not the same species, it must be very like it. He says, "The next morning I set off for Point Coupé; passed under the high pointed cliffs, and then set our course across the Mississippi, which is here near two miles over; touched at a large island near the middle of the river, being led there,

\* Since the above was written, I have a letter from Major Leconte, of New York, (June 13, 1836), in which he mentions having just received his specimens of this curious *Unio*, with some others which are very interesting, and he has kindly promised to place a specimen in my cabinet.



a little out of our way, in pursuit of a bear crossing from the main. After resting a while, we re-embarked, and continued on our voyage, coasting the east shore of the island to the upper end; here we landed again, on an extended projecting point of clean sand and pebbles, where were to be seen pieces of coal sticking in the gravel and sand, together with other fragments of the fossil kingdom, brought down by inundations and lodged there. We observed a large kind of muscle in the sand; the shell of an oval form, having horns or protuberances near half an inch in length, and as thick as a crow-quill, which I suppose serve the purpose of grapnels to hold their ground against the current. Embarked again, doubled the point of the island, and arrived at Point Coupé in the evening.”—*Travels*, p. 431.

I have several times endeavoured to procure the shell mentioned by Bartram, but have not been fortunate enough to succeed. The specimen figured here belongs to Professor Shepard, to whom I am indebted for several other fine species from the same locality. Professor Shepard informs me that he received three individuals from his friend Mr Cowper, with the remark that they were obtained with difficulty during the last summer from a bar in the Altamaha. Two of these specimens were given to Professor Ravenel, to whose kindness I am indebted for the promise of one of them.

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UNIO PLICIFERUS. Plate XVII. fig. 53.

*Testâ ellipticâ, inæquilaterali, subinflatâ, posticè undulatâ; valvulis anticè crassioribus; natibus prominulis; epidermide atro-viridi; dentibus cardinalibus submagnis; lateralibus rectis; margaritâ purpureâ.*

Shell elliptical, inequilateral, somewhat inflated, undulated behind; valves thicker before; beaks rather prominent; epidermis blackish green; cardinal teeth rather large; lateral teeth straight; nacre purple.

Hab. Mexico. Dr Burrough.

My Cabinet.

Cabinet of Dr Burrough.

Cabinet of Academy of Natural Sciences.

Diam. .8,                      Length 1.2,                      Breadth 2.1 inches.

Shell elliptical, inequilateral, somewhat inflated, furnished with numerous small folds on the posterior slope and side; substance of the shell thick before, and thinner behind; beaks rather prominent; ligament short and light horn-coloured; epidermis very dark green; cardinal teeth rather large, single in the right valve and double in the left; lateral teeth rather short and straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices situated on the base of the cardinal teeth; cavity of the shell rather deep; cavity of the beak angular; nacre purple, rarely white.

*Remarks.*—Among the shells recently sent by Dr Burrough from Mexico, were many specimens of this species, which I believe not to have been before described. It is remarkable for the numerous small folds on the posterior slope, and these in some individuals extend over the umbonial slope and posterior half of the side. In the old specimens the posterior margin is disposed to be biangular, and the epidermis is quite black—in the younger it is dark green, and obscure rays may sometimes be observed. Among the specimens examined, two were white in the nacre, and one of these salmon-coloured within the beaks. The lateral teeth, where the beaks are eroded, are somewhat curved.

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UNIO TAPPANIANUS.    Plate XVII. fig. 55.

*Testâ obovatâ, subinflatâ, inæquilaterali, posticè dilatatâ; valvulis tenuibus; natibus subprominentibus, undulatisque; epidermide fulvo-fuscâ; dentibus cardinalibus compressis curvisque; lateralibus tenuis; margaritâ subsalmoniâ.*

Shell obovate, rather inflated, inequilateral, dilated behind; valves thin; beaks somewhat prominent and undulated; epidermis yellowish brown; cardinal teeth compressed and curved; lateral teeth thin; nacre somewhat salmon.

*U. viridis* (Conrad), not Rafinesque.

Hab. Juniata, near Hollidaysburg.    Dr. Kirtland.

Schuylkill, and a small stream near Lancaster.    Mr Hyde.



My Cabinet.  
Cabinet of Dr Kirtland.  
Cabinet of Judge Tappan.  
Cabinet of Mr Hyde.

Diam. .7,                      Length 1.1,                      Breadth 2 inches.

Shell obovate, rather inflated, inequilateral, dilated behind, subalate; umbonial slope rounded, inflated; substance of the shell thin and transparent behind, opaque and thicker before; beaks somewhat prominent, furnished with double undulations; ligament rather short and slender; epidermis yellowish brown, with dark rays, more numerous on the portion behind the umbonial slope; cardinal teeth lamellar, curved outward, single in the right and double in the left valve; lateral teeth acicular; single in both valves, and nearly straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed on the base of the cardinal teeth; cavity of the shell deep and rounded; cavity of the beak small and angular; nacre somewhat salmon coloured.

*Remarks.*—Dr Kirtland found this shell near Hollidaysburg, on the Juniata, where he obtained it last autumn; and to his kindness I owe the specimen in my cabinet. In outline it resembles *U. modioliformis* (nobis), but cannot be easily confounded with that shell, being less inflated, less obovate, and more carinate. In the teeth it differs also, and is peculiar. The specimens which have come under my notice have the lateral teeth single in both valves; in the left valve there is a slight disposition in one of the specimens to duplication. The nacre of the shell is very iridescent and satin-like, the border dark ochre brown: this causes the stages of growth to be distinct.

It is remarkable that, being an inhabitant of the Schuylkill, there should have been but a single specimen taken, that river having been almost daily searched by so many active zoologists.

I name it after my friend, Judge Tappan, of Ohio.

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**ANODONTA DECORA. Plate XX. fig. 63.**

*Testâ ellipticâ, inæquilaterali, valdè inflatâ; valvulis tenuibus; natibus prominulis, ad apices undulatis; epidermide glabrâ, unâ vittatâ; margaritâ albâ, salmonis colore tinctâ.*

Shell elliptical, inequilateral, very much inflated; valves thin; beaks somewhat prominent and undulated at the tip; epidermis smooth and single banded; nacre white and salmon colour.

Hab. Canal near Cincinnati, Ohio. T. G. Lea.

Canal near Chilicothe, Ohio. Dr Ward.

My Cabinet.

Cabinet of T. G. Lea.

Cabinet of Dr Ward.

Cabinet of Mr Hyde.

Diam. 1·8,

Length 2·5,

Breadth 3·9 inches.

Shell elliptical, nearly straight on the dorsal margin, subangular behind, inequilateral, very much inflated; substance of the shell thin; beaks rather prominent, and undulated in a double series at the tip; ligament rather long and straight; epidermis smooth and shining, furnished with green rays beyond the dark transverse band situated about the middle of the valve; posterior slope dark, with three rays on each valve; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices situated in the centre of the cavity of the beaks; cavity of the shell deep; cavity of the beaks rather small; nacre slightly salmon-coloured in the cavity, and white on the remaining portion.

*Remarks.*—My brother, T. G. Lea, called my attention some years ago to this shell. It, however, so nearly resembled *A. plana* (nobis), that I was disposed to consider it only a variety of that species. A remarkably fine suite, however, recently received from Dr Ward, has satisfied me that it ought to be separated from it. Indeed these specimens are so much inflated, as to have induced Dr Ward to suppose they might belong to *An. Stewartiana* (nobis). The broad and distinct band which in adults transversely crosses the valve about half way between the beak and the margin, is very remarkable in this species. This band defines

the extent, in the interior, of the tint of salmon colour. Beyond this the epidermis is usually of a fine green and rayed, while the umbones and beaks are almost without rays.

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**BULIMUS LACTEUS.** Plate XXIII. fig. 100.

*Testâ ovato-conicâ, imperforatâ, nitidâ, lacteâ, tenui, subdiaphanâ, minutissimè transversim striatâ, infernè bruneo vittatâ; anfractibus senis; aperturâ subparvâ; labro acuto.*

Shell ovately conical, imperforate, shining, milky, thin, somewhat transparent, transversely and minutely striate, base with a brown band; whorls six; aperture rather small; outer lip acute.

Hab. about one hundred miles up the Magdalena River, Colombia.  
T. R. Peale.

My Cabinet.  
Philadelphia Museum.

Diam. .4,

Length .7 of an inch.

*Remarks.*—This is one of the new shells brought by Mr Peale from his scientific expedition into Colombia. It may be distinguished by the brown band, which immediately surrounds the base of the columella. One of the individuals under my inspection is more transparent and less white than the other.

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**BULIMUS PEALIANUS.** Plate XXIII. fig. 105.

*Testâ ovato-conicâ, imperforatâ, lævi, nitidâ, cinereâ, subcrassâ; flammulis purpureis longitudinalibus pictâ; anfractibus senis; aperturâ patulâ, purpureâ; labro acuto, reflexo.*

Shell ovately conical, imperforate, smooth, shining, ash coloured, rather thick; furnished with longitudinal purple spots; whorls six; aperture widened out, purple; outer lip acute, reflected.

Hab. near the Rapids of Angostura, Colombia. T. R. Peale.

## Philadelphia Museum.

Diam. .4,

Length 1.1 inches.

*Remarks.*—During Mr Peale's travels in Colombia, he found a single specimen of this beautiful species, and I am indebted to his kindness for the privilege of describing it. In this individual the longitudinal spots are more numerous on the whorl next to the body-whorl, there being none on that part near to the outer lip.

## BULIMUS COLOMBIANUS. Plate XXIII. fig. 110.

*Testâ elongato-turritâ, perforatâ, nitidâ, albâ, tenui, minutissimè transversim striatâ; apice aureâ; anfractibus septenis; aperturâ subparvâ; labro acuto.*

Shell elongately turrited, perforate, shining, white, thin, transversely and minutely striate; apex golden colour; whorls seven; aperture rather small; outer lip acute.

Hab. about one hundred miles up the Magdalena River, Colombia.  
T. R. Peale.

Philadelphia Museum.

Diam. .5,

Length 1.2 inches.

*Remarks.*—The spire is long, and the aperture about one-third the length of the shell. It is nearly milk white, and so thin as to be somewhat translucent.

## BULIMUS CORNEUS. Plate XXIII. fig. 111.

*Testâ ovato-conicâ, umbilicatâ, corneâ, tenui, pellucidâ; anfractibus septenis; aperturâ parvâ; labro acuto.*

Shell ovately conical, umbilicate, horn-colour, thin, pellucid; whorls seven; aperture small; outer lip acute.

Hab. Buenavista, Colombia. T. R. Peale.

My Cabinet.  
Philadelphia Museum.

Diam. .3,

Length .7 of an inch.

*Remarks.*—In form and size this resembles the *B. lactea*, herein described, but may be distinguished at once by its colour, its umbilicus, and the absence of a band. Owing, apparently, to the roughness of the epidermis, its surface is scarcely shining. I owe this shell to the kindness of Mr Peale.

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HELIX WARDIANA. Plate XXIII. fig. 82.

*Testâ orbiculato-convexâ, umbilicatâ, infernè depressâ, nitidâ, corneâ, diaphanâ; anfractibus senis, longitudinaliter striatis; striis confertis; spirâ obtusâ; labro acuto, intus spissatâ.*

Shell orbicularly convex, umbilicate, flattened below, shining, horn-coloured, translucent; whorls six, longitudinally striate; striæ close; spire obtuse; outer lip acute, within thickened.

Hab. near Cincinnati, Ohio. T. G. Lea.  
near Chilicothe, Ohio. C. J. Ward, M.D.

My Cabinet.  
Cabinet of T. G. Lea.  
Cabinet of C. J. Ward, M.D.

Diam. .4,

Length .3 of an inch.

*Remarks.*—While I had several specimens of this species from my brother, T. G. Lea, holding them somewhat in doubt as to their being distinct from *H. ligera* (Say), I received several fine specimens from Dr Ward, who informed me that “the inhabitant is differently marked from *ligera*.” He says, “the base of the foot is *white*, posteriorly acute. Body white, with blackish brown spots over it, and one *large* and two smaller black longitudinal bands extending from the neck to the end of the body.”

**CYCLOSTOMA MACULATA. Plate XXIII. fig. 87.**

*Testâ suborbiculatâ, transversim striatâ, carinatâ, maculatâ, diaphanâ, umbilicatâ; anfractibus quinis; spirâ subbrevis; ultimo anfractu medio carino cincto; labro margine albo, reflexo.*

Shell suborbicular, transversely striate, carinate, spotted, transparent, umbilicate; whorls five; spire rather short; carinate on the middle of the last whorl; margin of the lip white and reflected.

Hab. Manilla. W. W. Wood.

Philadelphia Museum.

Diam. .4,

Length .5 of an inch.

*Remarks.*—This pretty little species of *Cyclostoma* was sent by Mr Wood to Mr T. R. Peale, to whom I owe the opportunity of describing it. Its transparency and numerous brown spots distinguish it at once from all other species with which I am acquainted. In the individual before me, there is a second obscure carination above that on the middle of the whorl. In others this may be found to be more distinct or entirely wanting.

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**PLANORBIS LENS. Plate XXIII. fig. 83.**

*Testâ parvâ, lenticulari, lato-umbilicatâ, ad periphæriam carinatâ, pellucidâ, corneâ; anfractibus ternis; aperturâ magnâ.*

Shell small, lenticular, widely umbilicate, carinate on the periphery, pellucid, horn-coloured; whorls three; aperture large.

Hab. near Cincinnati, Ohio. R. Buchanan.

My Cabinet.

Cabinet of R. Buchanan.

Cabinet of T. G. Lea.

Diam. 3-20ths,

Length 1-20th of an inch.

*Remarks.*—This is the smallest of the *Planorbes* which has come under my notice, and may at once be distinguished by its lenticular form. The specimens in my possession I owe to my brother, T. G. Lea. They were first pointed out to him by Mr Buchanan.

NOTE.—I would be glad to be permitted to mention here, that the *Helicina pulcherrima* (Vol. V. page 49), and *Helix purpuragula* (Vol. V. page 51), supposed to be from Java, really inhabit Cuba, having recently received some collected on the mountainous part of that island.

Recently, in examining with a lens a very perfect specimen of *Carocolla spinosa* (See Vol. IV. page 104), I observed a remarkable character which had before escaped me. The superior part, in very perfect specimens, exhibits a crimped epidermis of a peculiar nature, being very irregular in the sizes of the crimps. Beneath the epidermis the shell is striate.

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*Continuation of Mr Lea's Paper. Read, August 19th, 1836.*

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## GENUS MARGARITA.

### SUBGENUS UNIO.

#### UNIO GRANIFERUS. Plate XIX. fig. 60.

*Testâ nodulosâ, subrotundâ, inflatâ, ponderosâ ; valvulis crassibus ; natibus valdè prominentibus ; epidermide atro-fuscâ ; dentibus cardinalibus grandibus ; lateralibus brevibus subrectisque ; margaritâ colore cacao.*

Shell nodulous, subrotund, inflated, ponderous ; valves thick ; beaks very prominent ; epidermis dark brown ; cardinal teeth large ; lateral teeth short and nearly straight ; nacre chocolate-colour.

Hab. Ohio River, near Cincinnati. T. G. Lea.

My Cabinet.

Cabinet of T. G. Lea.

Cabinet of Mr Hyde.



Diam. 1·4,                      Length 1·9,                      Breadth 1·9 inches.

Shell nodulous, subrotund, emarginate behind, inflated, ponderous, sulcate on the posterior slope; substance of the shell very thick; umbones large; beaks very prominent; tubercles not numerous, rather small, disposed to be erect and transverse; ligament rather short; epidermis dark brown; cardinal teeth large and spread out; lateral teeth short, thick, and nearly straight; anterior cicatrices distinct; posterior cicatrices distinct; dorsal cicatrices situated on the inferior portion of the cardinal teeth; cavity of the shell small; cavity of the beaks deep and angular; nacre chocolate-colour.

*Remarks.*—This shell is very closely allied to the *verrucosus* (Barnes), and has been, I believe, generally considered as a variety of it. In several of its characters, however, it is quite distinct. It differs in being a smaller shell, in being much more inflated over the umbones, in the granules or tubercles being smaller, more erect and more transverse. In the epidermis it is much darker. In my youngest specimen the beaks are nearly perfect, and at the tip they are very minutely and closely undulated.

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UNIO SPLENDIDUS.    Plate XIX. fig. 61.

*Testâ ellipticâ, valdè inflatâ; valvulis subcrassibus; natibus prominentibus; epidermide valdè radiatâ; dentibus cardinalibus subcompressis; lateralibus remotis lamellatisque; margaritâ splendidâ rosâque.*

Shell elliptical, very much inflated; valves rather thick; beaks prominent; epidermis very much rayed; cardinal teeth somewhat compressed; lateral teeth separate and lamellar; nacre splendid rose-colour.

Hab. Altamaha River, near Darien, Geo. James Hamilton Cowper, Esq.

Hab. Altamaha, Liberty County, Geo. Lewis Leconte, Esq.

My Cabinet.

Cabinet of Professor Shepard.

Cabinet of Major Leconte.

Diam. 1·4,                      Length 1·7,                      Breadth 2·8 inches.

Shell elliptical, very much inflated; substance of the shell rather thick; umbones large; umbonial slope carinate; posterior slope with three indistinct ribs on each valve; beaks prominent; ligament rather long and somewhat thick; epidermis yellowish, with numerous dark green rays over the whole disk; cardinal teeth somewhat compressed, double in both valves, enlarged at the anterior portion; lateral teeth separated from the cardinal teeth, lamellar, the inferior division of that of the left valve enlarged, and longer than the superior one; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices within the cavity of the beaks under the cardinal tooth; cavity of the shell deep and angular along the carina of the umbonial slope; cavity of beaks deep and rounded; nacre splendid rose-colour.

*Remarks.*—I owe this species, which came into my possession some months since, to Professor Shepard, who procured it from his friend Mr Cowper. It very closely resembles the *U. ochraceus* (Say), but may be distinguished from it by its carinate umbonial slope, and its being more inflated. The colour of all the specimens I have examined is, in the nacre, of a rose tint. A single one has a slight salmon colour mixed with it. When more are examined, there may be some found entirely salmon or white.

I owe to the kindness of Major Leconte some very fine specimens from Liberty county, where they were found with the *U. spinosus*.

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#### SUBGENUS MARGARITANA.

#### M. ARCULA. Plate XXII. fig. 69.

*Testâ plicatâ, triangulari, valdè inflatâ; valvulis tenuissimis; clivo umboniali carinato; natibus valdè prominentibus; epidermide atro-viride, radiatâ; dentibus laminatis, irregularibus; margaritâ cœruleâ.*

Shell plicate, triangular, very much inflated; valves very thin; umbonial slope carinate; beaks very prominent; epidermis dark green, radiated; teeth lamellar, irregular; nacre bluish.

Hab. Altamaha, Liberty County, Geo. Lewis Leconte, Esq.  
My Cabinet.

Cabinet of Major Leconte.

Diam. 1·6, Length 1·7, Breadth 2·2 inches.

Shell plicate, triangular, very much inflated; substance of the shell very thin; umbones very large; umbonial slope acutely carinate; posterior slope very much flattened, having an indistinct furrow along the edge of the carina; folds about eight, large on the beaks, and diminishing along the edge of the carina; ligament small; epidermis dark green, with numerous green rays over the whole disk; teeth lamellar, irregular; anterior cicatrices confluent; posterior cicatrices not perceptible; dorsal cicatrices not perceptible; cavity of the shell very deep, acutely angular under the carina, having two furrows leading from the beak to the posterior margin; cavity of the beak very deep and angular; nacre very thin, bluish, often tinted with pink.

*Remarks.*—I owe to the kindness of Major Leconte the possession of this very interesting species. It is entirely distinct from any I am acquainted with, and is peculiar for the folds which are placed along the umbonial slope, and lie at right angles with it. It is among the most inflated species of the family, and the substance of the shell is thinner than in any species of its size which I know. The posterior slope is so flat, that the valves when placed on that part will rest there. In the folds it has some resemblance to the *Alas. undulata* (Say), but in this species they are larger and more numerous than in the *undulata*. In outline it resembles *U. triangularis* (Barnes). Taking a posterior view of it, one is reminded, by the outline, of *Cardium cardissa*.

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*Continuation of Mr Lea's Paper. Read, Nov. 4th, 1836.*

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UNIO DORFEUILLIANUS. Plate XVII. fig. 54.

*Testâ subtriangulari, inflatâ, tuberculatâ, inæquilaterali; valvulis præcrassis; natibus magnis elevatisque; dentibus cardinalibus magnis erectisque; lateralibus brevibus curvisque; margaritâ albâ.*

Shell subtriangular, inflated, tuberculate, inequilateral; valves very thick; beaks large and elevated; cardinal teeth large and erect; lateral teeth short and curved; nacre white.

Hab. Ohio River. Mr Dorfeuille, Cincinnati.

My Cabinet.

Diam. 2·2,                      Length 2·6,                      Breadth 2·9 inches.

Shell subtriangular, inflated, tuberculate on the umbones; substance of the shell very thick; beaks large, very prominent and recurved; ligament short and thick; epidermis dark brown and transversely striate; cardinal teeth large and erect; lateral teeth short, thick and curved; anterior cicatrices distinct, the great one forming a very deep pit; posterior cicatrices distinct; dorsal cicatrices situated on the inferior part of the cardinal tooth; cavity of the shell deep; cavity of the beaks deep and angular; nacre white.

*Remarks.*—A single specimen of this species belonged to the Museum of Mr Dorfeuille, who very obligingly presented it to me. I do not know from what part of the Ohio it was obtained, and although a single specimen, and resembling two species, I have considered it proper to propose it as a new species, being unable to class it with any one known to me. In general outline and thickness it resembles *U. trigonus* (nobis), but, having higher beaks and being tuberculated, cannot be classed with that species. In the possession of tubercles it resembles *U. pustulatus* (nobis), but differs from it in having very elevated thick beaks, in having very few tubercles (these are scattered over

the central portion of the disk only), and in the outline being subangular.

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UNIO DISCUS. Plate XVIII. fig. 57.

*Testâ ellipticâ, valdè compressâ, inæquilaterali; valvulis crassis; natibus prominentibus; dentibus cardinalibus magnis; lateralibus longis, à cardinalibus separatis; margaritâ purpureâ et iridescente.*

Shell elliptical, very much compressed, inequilateral; valves thick; beaks prominent; cardinal teeth large; lateral teeth long, being separated from the cardinal teeth; nacre purple and iridescent.

Hab. India.

My Cabinet.

Diam. 1·4,                      Length 3·3,                      Breadth 5·2 inches.

Shell elliptical, very much compressed, biangular behind, inequilateral; substance of the shell thick; beaks prominent; ligament long and thick; cardinal teeth large, regularly sulcate and deeply cleft in the left valve; lateral teeth long, thicker at the posterior end, and separated from the cardinal tooth; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed across the base of the cardinal tooth; cavity of the shell very shallow; cavity of the beaks rather small and subangular; nacre purple and iridescent.

*Remarks.*—This description is made from a single decorticated valve, procured of Mr B. Tanner, who purchased it in a lot of shells brought from India. When I first saw this specimen it was evident to me that it differed from any known American species; and finding, subsequently, that it was most probably a native of India, I could no longer hesitate as to its being new. It bears some resemblance to *U. crassidens* (Lam.) and *U. alatus* (Say). It differs from the former in being flatter, more spread out, and the substance of the shell being less thick. From the latter it differs in being thicker in the substance of the shell, in being ovate, and being without a wing. It is very much to be regretted that the exterior should be so much deprived of its epidermis as to



render it impossible to form a correct opinion as to its appearance in a perfect state.

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UNIO CONTRADENS. Plate XVIII. fig. 58.

*Testâ obovatâ, subinflatâ, inæquilaterali; valvulis tenuibus; natibus subprominentibus undulatisque; epidermide subviridi; dentibus cardinalibus lineatis, duplicibus in valvulam dextram; lateralibus tenuibus subcurvisque; margaritâ albâ et iridescente.*

Shell obovate, rather inflated, inequilateral; valves thin; beaks rather prominent and undulated; epidermis greenish; cardinal teeth linear, the double one in the right valve; lateral teeth thin and somewhat curved; nacre pearly white and iridescent.

Hab. . . . .

My Cabinet.

Diam. .7,                      Length 1.1,                      Breadth 1.9 inches.

Shell obovate, rather inflated, smooth, inequilateral; substance of the shell thin; beaks somewhat prominent, with numerous small undulations extending on the posterior slope; ligament rather long and thin; epidermis yellowish green over the whole disk, except the posterior slope, which is green; cardinal teeth long, linear, *single in the left and double in the right valve*; lateral teeth long, thin, and somewhat curved; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather deep; cavity of the beaks rather shallow and angular; nacre pearly white and iridescent.

*Remarks.*—I am not acquainted with the habitat of this shell, having purchased it of a dealer, who did not know from what waters it was obtained. In the exterior and general appearance it resembles *U. Tappanianus* (nobis). The remarkable character of its cardinal teeth will distinguish it from that and all other species with which I am acquainted. The single and double tooth have here changed places, the single being in the left valve. They are thin, and run nearly parallel to the margin. The undulations about the region of the beaks are remarkably fine and beautiful.



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UNIO MENKIANUS. Plate XIX. fig. 59.

*Testâ ellipticâ, subcompressâ, inæquilaterali, valvulis subtenuibus; natibus subprominentibus undulatisque; epidermide fulvâ et multiradiatâ; dentibus cardinalibus parvis erectisque; lateralibus longis subrectisque; margaritâ albâ et iridescente.*

Shell elliptical, rather compressed, inequilateral; valves rather thin; beaks somewhat prominent and undulated; epidermis yellow and much rayed; cardinal teeth small and erect; lateral teeth long and nearly straight; nacre pearly white and iridescent.

Hab. Harpeth River, Ten. Professor Troost.

My Cabinet.

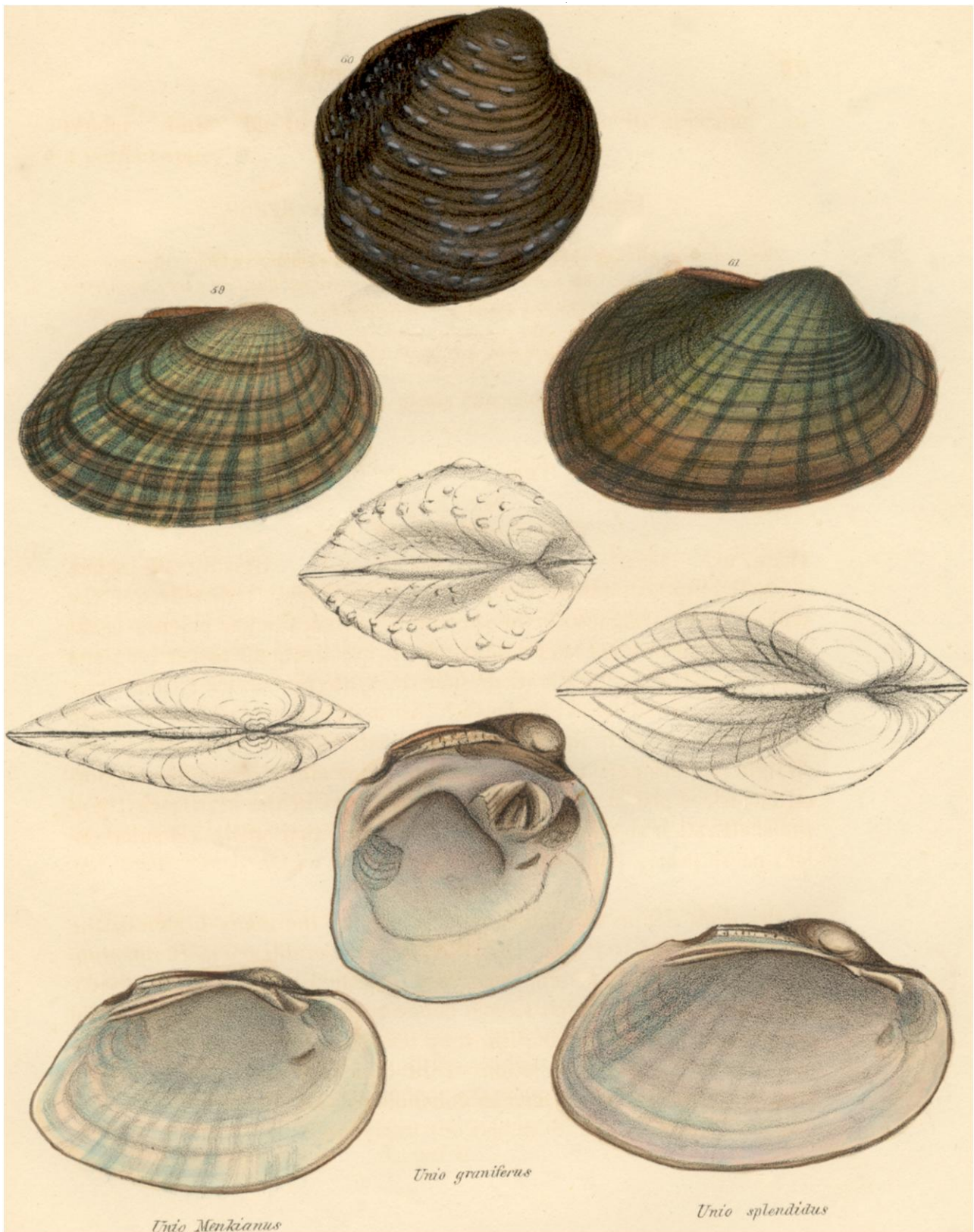
Cabinet of Professor Troost.

Diam. .9, Length 1.5, Breadth 2.5 inches.

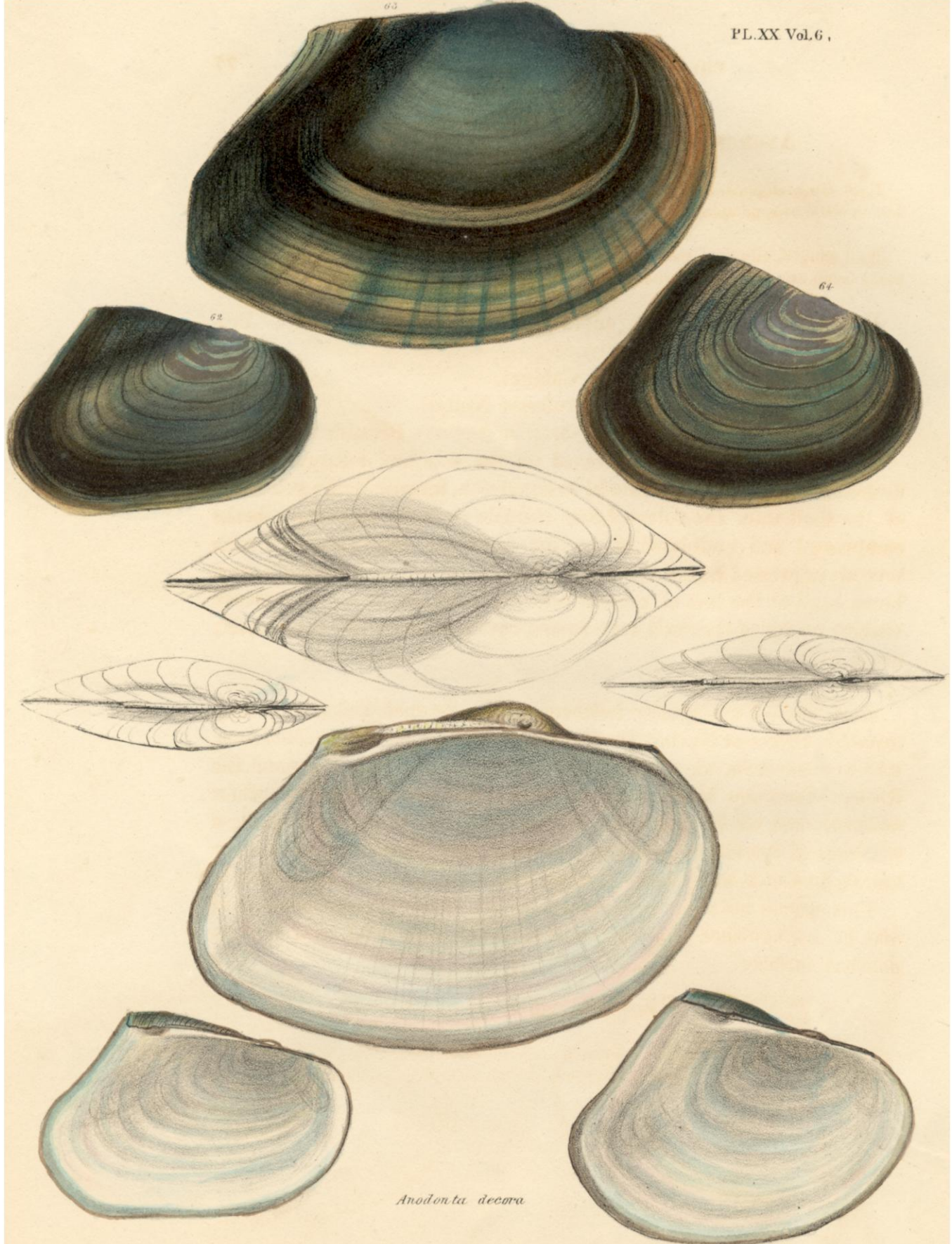
Shell elliptical, rather compressed, inequilateral, radiated over the whole disk; substance of the shell thin behind, thicker before; beaks somewhat prominent and undulated at tip; ligament rather long and thin; epidermis yellow, rather smooth, with numerous rather large, green rays, radiating to all parts of the margin; cardinal teeth small, conical, deeply cleft in the left valve; lateral teeth long and nearly straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather shallow; cavity of the beaks rather small and subangular; nacre pearly white and iridescent.

*Remarks.*—This is another new species of the many I owe to the kindness of Professor Troost. It has some resemblance to *U. interruptus* (nobis), and may be said to connect that shell with *U. crassus* (Say). The two specimens which I have before me are covered with beautiful green rays over the whole disk, they being thicker and darker on the posterior half. The undulations of the beaks are small and numerous. I name it after the able German conchologist, Dr Menke.

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*Anodonta decora*

*Anodonta Nuttalliana*

*Anodonta Wahlamatensis*

**ANODONTA NUTTALLIANA. Plate XX. fig. 62.**

*Testâ alatâ, ellipticâ, compressâ, glabrâ, inæquilaterali ; valvulis tenuibus connatisque ; natibus compressis, ad apices undulatis ; epidermide politâ ; margaritâ albâ.*

Shell winged, elliptical, compressed, smooth, inequilateral ; valves thin and connate ; beaks compressed and undulated at the tip ; epidermis polished ; nacre white.

Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .7,                      Length 1.5,                      Breadth 2.3 inches.

Shell winged, elliptical, flattened on the side and enlarged on the umbonial slope, subemarginate at base, smooth, inequilateral ; substance of the shell thin, the valves being connate over the ligament ; beaks compressed and undulated at the tip ; umbonial slope furnished with several impressed lines ; epidermis smooth and polished, having a dark broad band at the line of growth near the margin ; cicatrices scarcely visible ; cavity of the shell very small ; cavity of the beaks very small ; nacre white.

*Remarks.*—I am greatly indebted to the learned and enterprising traveller, Professor Nuttall, for this and two other species of *Anodonta*, which come from an entirely new locality. The rivers beyond the Rocky Mountains had not before been examined in regard to their mollusca, and we have now for the first time the pleasure of seeing a specimen of this family from these waters. The Wahlamat is the river known in Lewis and Clark's Travels under the name of Multnoma.

This species has some resemblance to *An. Benedictensis* (nobis), but may be distinguished by its flattened sides and dark band, as well as its polished surface.

**ANODONTA WAHLAMATENSIS. Plate XX. fig. 64.**

*Testâ alată, triangulari, subinflată, inæquilaterali; valvulis tenuibus connatisque; natibus subcompressis, ad apices undulatis; epidermide subfulgidâ; margaritâ albâ.*

Shell winged, triangular, somewhat inflated, inequilateral; valves thin and connate; beaks rather compressed and undulated at the tip; epidermis somewhat shining; nacre white.

Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .8, Length 1.8, Breadth 2.5 inches.

Shell winged, triangular, inflated on the lower posterior part, inequilateral; substance of the shell thin, the valves being connate over the ligament; beaks rather compressed, undulated at the tip, and yellow as far as the first stage of growth; epidermis rather smooth and shining, having a small dark band at the line of growth near the margin; cicatrices scarcely visible; cavity of the shell shallow; cavity of the beaks very shallow; nacre white.

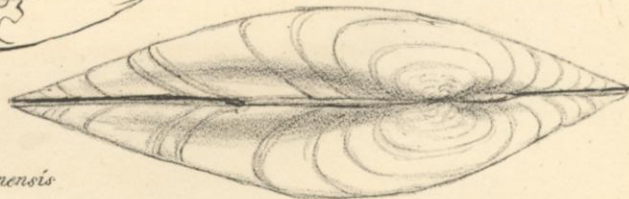
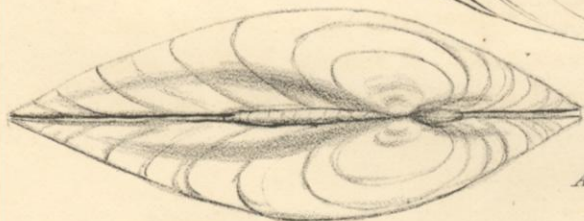
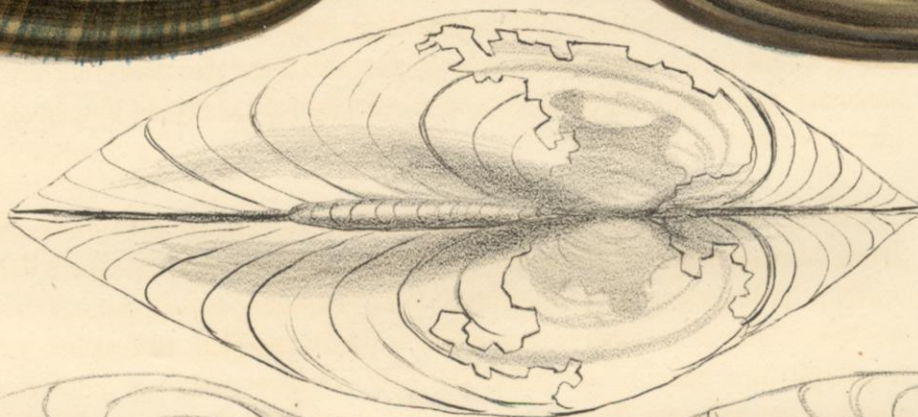
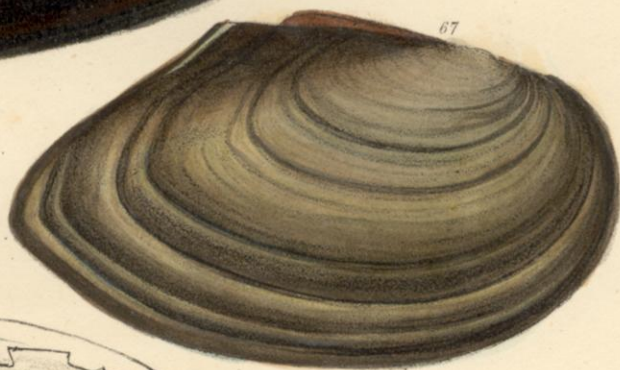
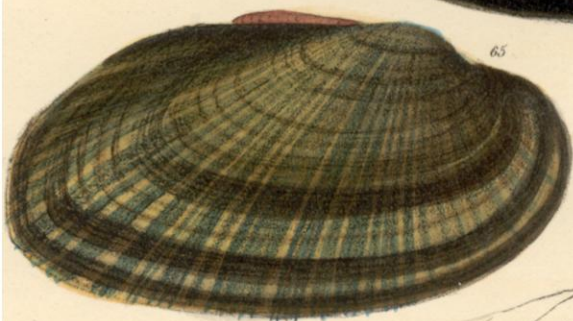
*Remarks.*—This is one of the species brought by Professor Nuttall from his late expedition to the Columbia River, over the Rocky Mountains. It has some resemblance to the *Nuttalliana*, but cannot be easily mistaken for that species, being different in outline and more inflated. In its outline and in the inflation of the lower posterior portion of the shell, it resembles *Alas. complanata* (Barnes). Professor Nuttall also met with this and the above species in Lewis's River, a branch of the Shoshonee.

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**ANODONTA PAVONIA. Plate XXI. fig. 65.**

*Testâ ellipticâ, inflată, valdè radiatâ, inæquilaterali; valvulis tenuibus; natibus prominulis, ad apices undulatis; epidermide glabrâ; margaritâ cæruleâ.*

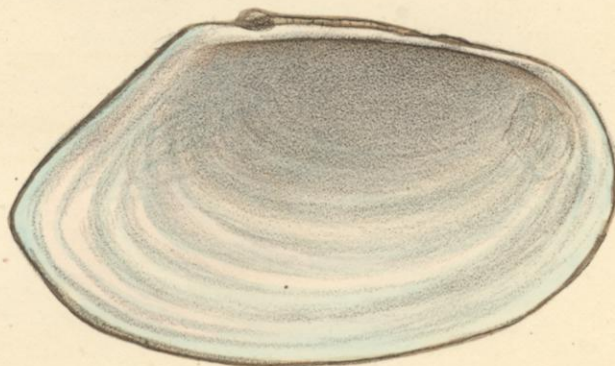




*Anodonta Newtonensis*



*Anodonta parvonia*



*Anodonta Oregonensis*



Shell elliptical, inflated, very much radiated, inequilateral; valves thin; beaks somewhat prominent and undulated at the tip; epidermis smooth; nacre bluish.

Hab. head waters of the Little Beaver, Ohio. J. P. Kirtland, M. D.

My Cabinet.

Cabinet of Dr Kirtland.

Cabinet of Mr Hyde.

Cabinet of Dr Jay.

Diam. 1·1, Length 1·5, Breadth 3 inches.

Shell elliptical, inflated, very much radiated, inequilateral; substance of the shell thin; beaks somewhat prominent and furnished with rather large undulations at the tip; ligament rather short and thin; epidermis smooth, shining and furnished with numerous dark green rays, which diverge to the whole margin, the larger ones being generally about the centre of the valve; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices placed on the interior of the curve at the point of the beaks; cavity of the shell deep and large; cavity of the beak small and angular; nacre bluish.

*Remarks.*—I owe to Dr Kirtland this beautiful *Anodonta*, which he has recently discovered in the Little Beaver, in considerable quantities. In the interior it very much resembles *An. Ferussaciana* (nobis) and has, like that shell, an incipient tooth at the immediate point of the beak. In the exterior it is distinguished from all the species with which I am acquainted, by its numerous and very beautiful dark green rays, which so much pervade as to give the disk, in some individuals, almost a black appearance.

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#### ANODONTA NEWTONIENSIS. Plate XXI. fig. 66.

*Testâ ellipticâ, inflatâ, inæquilaterali; valvulis crassis; natibus subprominentibus, ad apices undulatis; epidermide fulgidâ; margaritâ albâ.*

Shell elliptical, inflated, inequilateral; valves thick; beaks rather prominent and undulated at the tip; epidermis shining; nacre white.

Hab. Newtown Creek, New Jersey, near Philadelphia. Wm. Hyde.  
Also Schuylkill, at Fair Mount.

My Cabinet.

Cabinet of Mr Hyde.

Diam. 2·1, Length 2·3, Breadth 4·6 inches.

Shell elliptical, inflated, inequilateral; substance of the shell thick; beaks somewhat prominent and rather largely undulated at the tip; ligament rather short; epidermis dark brown, smooth, shining and apparently without rays; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices obsolete; cavity of the shell deep; cavity of the beaks very small; nacre white, sometimes salmon colour.

*Remarks.*—The large specimen here figured was found by Mr Hyde in Newtown Creek, nearly opposite to Philadelphia, many years since, and is the only full grown or large one I have seen. Within five or six years, from time to time, I have found near Fair Mount, six individuals, which, although they appeared not to be mature shells, were evidently different from any described *Anodonta*, and I have not hesitated to refer them to this species observed by Mr Hyde. The specimens from Fair Mount are rather thin in the substance of the shell, while that from Newtown Creek is somewhat thick. This may be referred to difference of age. In all the specimens there is an entire absence of rays and the young are possessed of a yellow epidermis. This species differs from the *An. fluviatilis*, (*cataracta*, Say), in being more transverse, in the beaks being more medial and in having the undulations of the beaks larger, while the *fluviatilis* is more granulate.

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ANODONTA OREGONENSIS. Plate XXI. fig 67.

*Testâ subalatâ, ellipticâ, subinflatâ, inæquilaterali; valvulis tenuibus; natibus vix prominentibus, ad apices undulatis; epidermide subfulgidâ striatâque; margaritâ albâ.*

Shell subalate, elliptical, somewhat inflated, inequilateral; valves thin; beaks scarcely prominent, undulated at the tip; epidermis rather shining and striate; nacre white.



Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. 1,                      Length 1·8,                      Breadth 3·2 inches.

Shell somewhat winged, elliptical, rather inflated, inequilateral; substance of the shell thin; beaks scarcely prominent and undulate at tip; epidermis somewhat shining and striate; posterior and anterior cicatrices both confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather deep; cavity of the beak very small; nacre white.

*Remarks.*—Another species for which I am indebted to Professor Nuttall, procured in his late journey. It has some resemblance to *An. cygnea*, but is still more closely allied to *An. Benedictensis* (nobis).

#### ANODONTA EXILIS. Plate XXII. fig. 68.

*Testâ latâ, valdè compressâ, inæquilaterali; valvulis tenuibus; natibus vix prominulis; epidermide glabrâ; margaritâ ceruleâ et iridescente.*

Shell wide, very much compressed, inequilateral; valves very thin; beaks scarcely prominent; epidermis smooth; nacre bluish and iridescent.

Hab. . . . .

My Cabinet.

Diam. ·8,                      Length 1·6,                      Breadth 3·4 inches.

Shell wide, very much compressed, slender, rounded before and angular behind, inequilateral; dorsal and basal margin nearly parallel; substance of the shell very thin; beaks scarcely prominent; ligament long and thin; epidermis smooth, brown, apparently without rays; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices posterior to and below the cavity of the beaks; cavity of the shell wide

and shallow; cavity of the beaks very small; nacre bluish and iridescent.

*Remarks.*—I procured this remarkably compressed *Anodonta* from Mr Warren, of Boston. Its habitat, unfortunately, was not known. It may be distinguished from all the other species with which I am acquainted by its compressed and slender form.

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IRIDINA CÆLESTIS. Plate XXII. fig. 70.

*Testâ latissimâ, subcylindræâ, lævissimâ, valdè inæquilaterali; valvulis tenuibus; natibus prominulis; epidermide politâ, tenebrosâ; margaritâ cæruleâ et iridescente.*

Shell very broad, subcylindrical, very smooth, very inequilateral; valves thin; beaks somewhat prominent; epidermis polished, very dark; nacre bluish and iridescent.

Hab. Africa.

My Cabinet.

Cabinet of Dr Jay.

Diam. .7,                      Length 1.1,                      Breadth 3.4 inches.

Shell very broad, subcylindrical, very smooth, very inequilateral, straight on the dorsal margin, rounded before and angular behind; substance of the shell thin and delicate; beaks somewhat prominent, and apparently without undulations at the tip; epidermis highly polished, nearly black on the anterior, posterior and inferior portion of the valves, obsoletely rayed; cicatrices scarcely visible; cavity of the shell rather deep; cavity of the beaks very small; nacre bluish, with a tint of purple on the anterior portion, very iridescent.

*Remarks.*—The first specimen of this shell which came under my notice I purchased from a dealer in New York, who informed me it came from Africa. For a second specimen, I am indebted to Dr Jay, who gave me the same habitat. It was sent to him under the impression of its being the "*Mutel*" of Adanson. By a comparison with Adanson's figure, it will be at once observed to differ from it entirely





Drawn from Stone by J. Drayton.

- |                      |                       |                      |                     |                      |                        |                     |                    |
|----------------------|-----------------------|----------------------|---------------------|----------------------|------------------------|---------------------|--------------------|
| 71 <i>Helix</i>      | <i>Mitchelliana</i>   | 82 <i>Helix</i>      | <i>Wardiana</i>     | 93 <i>Paludina</i>   | <i>virens</i>          | 104 <i>Paludina</i> | <i>pallida</i>     |
| 72 "                 | <i>Vancouverensis</i> | 83 <i>Planorbis</i>  | <i>lens</i>         | 94 <i>Lymnæa</i>     | <i>apacina</i>         | 105 <i>Bulimus</i>  | <i>pealianus</i>   |
| 73 <i>Carocolla</i>  | <i>Hydiana</i>        | 84 <i>Helix</i>      | <i>Nickliniana</i>  | 95 <i>Melania</i>    | <i>plicata</i>         | 106 <i>Physa</i>    | <i>aurea</i>       |
| 74 <i>Helix</i>      | <i>Muttalliana</i>    | 85 "                 | <i>Oregonensis</i>  | 96 <i>Bulimus</i>    | <i>parrus</i>          | 107 <i>Succinea</i> | <i>aperta</i>      |
| 75 "                 | <i>Columbiana</i>     | 86 <i>Melania</i>    | <i>Troostiana</i>   | 97 "                 | <i>virgo</i>           | 108 <i>Bulimus</i>  | <i>decoratus</i>   |
| 76 <i>Cyclostoma</i> | <i>Popayana</i>       | 87 <i>Cyclostoma</i> |                     | 98 <i>Melania</i>    | <i>inflata</i>         | 109 <i>Paludina</i> | <i>Nickliniana</i> |
| 77 <i>Ampullaria</i> | <i>Pealiana</i>       | 88 <i>Helix</i>      | <i>maculata</i>     | 99 <i>Bulimus</i>    | <i>Gibbonius</i>       | 110 <i>Bulimus</i>  | <i>Columbianus</i> |
| 78 <i>Paludina</i>   | <i>Sinistrosa</i>     | 89 <i>Paludina</i>   | <i>magnifica</i>    | 100 "                | <i>lacteus</i>         | 111 "               | <i>corneus</i>     |
| 79 <i>Helix</i>      | <i>Californensis</i>  | 90 <i>Melania</i>    | <i>pliocera</i>     | 101 <i>Megaspira</i> | <i>Ruschenbergiana</i> | 112 "               | <i>maculatus</i>   |
| 80 "                 | <i>Townsendiana</i>   | 91 <i>Lymnæa</i>     | <i>solida</i>       | 102 <i>Bulimus</i>   | <i>gracilis</i>        | 113 "               |                    |
| 81 <i>Paludina</i>   | <i>hyalina</i>        | 92 <i>Bulimus</i>    | <i>glandiformis</i> | 103 <i>Paludina</i>  | <i>nuclea</i>          | 114 "               |                    |

in outline. It cannot easily be confounded with any of the described species of *Iridina*. It is a small species, and may be distinguished at once by its dark ebony epidermis, and beautiful blue and iridescent nacre. In none of the specimens which I have seen, is there the least disposition to crenulation on the dorsal margin. On the carina there is a small line below, and nearly parallel to the dorsal margin.

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**BULIMUS GLANDIFORMIS.** Plate XXIII. fig. 92.

*Testâ ovatâ, rugosâ, subinflatâ, imperforatâ, subcrassâ, granosâ, rufo-fuscâ, albo-maculatâ ; anfractibus quaternis, ultimo magno ; aperturâ purpureâ, ovatâ, submagnâ ; labro reflexo ; columellâ lævi.*

Shell ovate, rugose, somewhat inflated, imperforate, rather thick, granose, reddish brown, white spotted ; whorls four, the last being large ; aperture purple, ovate, rather large ; outer lip reflexed ; columella smooth.

Hab. New Granada, between La Plata and Tocaima. J. H. Gibbon, M. D.

My Cabinet.

Diam. .7,

Length 1.3 inches.

*Remarks.*—This species is about the size of and somewhat resembles an acorn. Its rugosity is owing to the surface being covered with numerous small pits. The spots are few, and placed nearly at the termination of the last whorl. On the same whorl, further removed from the tip, there are numerous indistinct white marks. The body-whorl is about five-sixths the length of the shell, the superior whorls being lighter, and having a dark indistinct line along the suture. The apex is obtuse, and the reflected lip white and rounded like a cord. I am indebted to Dr Gibbon for this species, obtained during his recent travels in New Granada.

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**BULIMUS PARVUS.** Plate XXIII. fig. 96.

*Testâ conicâ, imperforatâ, carinatâ, lacteâ ; apice rufo ; anfractibus senis, planulatis ; aperturâ ovatâ ; labro acuto ; columellâ lævi, subangulatâ.*

Shell conical, imperforate, carinate, milky white ; apex reddish ; whorls six, flattened ; aperture ovate ; outer lip acute ; columella smooth, subangular.

Hab. near Carthagenâ, S. A. J. H. Gibbon, M. D.

My Cabinet.

Diam. .3,

Length .5 of an inch.

*Remarks.*—A very small species, of which I received from Dr Gibbon only a single specimen. There are some marks on it which induce me to believe that it may sometimes be found banded.

**BULIMUS VIRGO.** Plate XXIII. fig. 97.

*Testâ conico-acutâ, perforatâ, nitidâ, diaphanâ, longitudinaliter striatâ ; anfractibus septenis, convexiusculis ; aperturâ ovatâ ; labro acuto ; columellâ angulatâ.*

Shell acutely conical, perforate, shining, longitudinally striate, diaphanous ; whorls seven, slightly convex ; aperture ovate ; outer lip acute ; columella angular.

Hab. near Carthagenâ, S. A. J. H. Gibbon, M. D.

My Cabinet.

Diam. .3,

Length .9 of an inch.

*Remarks.*—A single specimen only of this was brought by Dr Gibbon. It resembles in size, and some of its characters, the *maculatus* herein described. It may, however, be at once distinguished by its want of spots, the absence of a black apex, and in being perforate.

**BULIMUS GIBBONIUS.** Plate XXIII. fig. 99.

*Testâ ovatâ, ventricosâ, perforatâ, subcrassâ, granosâ, tenebroso-fuscâ, atro-maculatâ; anfractibus quinis, ultimo magno; aperturâ purpureâ, magnâ, obliquâ; labro reflexo; columellâ albidâ.*

Shell ovate, ventricose, perforate, somewhat thick, granose, dark brown, black maculate; whorls five, the last being large; aperture purple, large, oblique; outer lip reflexed; columella whitish.

Hab. New Granada, between La Plata and Tocaima. J. H. Gibbon, M. D.

My Cabinet.

Diam. 2·4,

Length 3·5 inches.

*Remarks.*—I owe the possession of this fine shell to the kindness of Dr Gibbon, who obtained it during his expedition to the Pacific Ocean, by Panama; and to him I dedicate it. It is remarkable for its dark colour, the substance of the shell being of a dark purple. The spots are dark, small, irregular and indistinct, and the surface irregularly pitted and minutely granulate. The body-whorl is about five-sixths the length of the shell, the superior whorls being darker, and having a white indistinct line along the suture. The apex is pointed.

---

**BULIMUS GRACILIS.** Plate XXIII. fig. 102.

*Testâ subfusiformâ, nitidâ, subperforatâ, albidâ, trivittatâ, longitudinaliter striatâ; anfractibus planulatis; aperturâ ovatâ; labro reflexo; columellâ lævi, purpureâ.*

Shell subfusiform, shining, subperforate, whitish, with three imperfect bands, longitudinally striate; whorls flattened; aperture ovate; outer lip reflexed; columella smooth and purple.

Hab. near Carthagera, S. A. J. H. Gibbon, M. D.

My Cabinet.

Diam. ·6,

Length 1·4 inches.

*Remarks.*—Among the fine land shells which I owe to Dr Gibbon was a single specimen of this graceful looking species. Other individuals may be more or less coloured. In this one the bands are indistinct, and are of a brownish tint, being more strongly marked in the interior.

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**BULIMUS DECORATUS.** Plate XXIII. fig. 108.

*Testâ subturritâ, imperforatâ, nitidâ, croceâ, trifasciatâ; anfractibus senis, convexiusculis; aperturâ ovalâ, caniculatâ; labro subreflexo; columellâ arcuatâ.*

Shell somewhat turrited, imperforate, shining, reddish saffron, three-banded; whorls six, somewhat convex; aperture ovate, channeled; outer lip slightly reflexed; columella arched.

Hab. near Carthagenâ, S. A. J. H. Gibbon, M. D.

My Cabinet.

Diam. .5,

Length 1.2 inches.

*Remarks.*—A singularly beautiful species, and remarkable for its fine colour, its three yellow bands, and the channel at the base. It is among the finest of the species brought by Dr Gibbon from his late voyage to New Granada.

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**BULIMUS MACULATUS.** Plate XXIII. fig. 112.

*Testâ conico-acutâ, imperforatâ, nitidâ, albâ, rufo-maculatâ; apicè nigro; anfractibus septenis, subplanulatis; aperturâ ovalâ; labro acuto; columellâ subangulatâ.*

Shell acutely conical, imperforate, shining, white, with reddish spots; apex black; whorls seven, rather flattened; aperture ovate; outer lip sharp; columella somewhat angular.

Hab. near Carthagenâ, S. A. J. H. Gibbon, M. D.

My Cabinet.

Diam. .3,

Length .9 of an inch.

*Remarks.*—A delicate little species, of which I received but a single specimen, and this not entirely perfect in the mouth. The spots are quadrate, and arranged in a double series on the four lower whorls.

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### HELIX MITCHELLIANA. Plate XXIII. fig. 71.

*Testâ supernè obtuso-conicâ, infernè inflatâ, longitudinaliter et subtiliter striatâ, cornedâ, diaphanâ, imperforatâ; anfractibus quinis; aperturâ subrotundatâ; labro reflexo; columellâ lævi.*

Shell above obtusely conical, below inflated, longitudinally and finely striate; horn-colour, transparent, imperforate; whorls five; aperture nearly round; outer lip reflexed; columella smooth.

Hab. Ohio. J. K. Mitchell, M. D.

My Cabinet.

Diam. .7,

Length .4 of an inch.

*Remarks.*—I am indebted to Dr Mitchell for this shell, which was sent to him by a friend from Ohio. It is rather larger than the *H. clausa* (Say) and *H. jejuna* (Say), but in form resembles them. It may be distinguished from the latter in not being perforate, and from the former in having a sharper lip. In its striæ it is distinct from both, in having them larger and much better defined.

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### HELIX VANCOUVERENSIS. Plate XXIII. fig. 72.

*Testâ plano-convexâ, infernè planulatâ, nitidâ, longitudinaliter striatâ, cornedâ, latè umbilicatâ; anfractibus quinis, rotundatis; aperturâ subrotundatâ; labro infernè subreflexo, supernè depresso; columellâ brevi, callosâ.*

Shell plano-convex, below flattened, shining, longitudinally striate, horn-colour, widely umbilicate; whorls five, rounded; aperture roundish; outer lip below somewhat reflexed, above depressed; columella short, callous.

Hab. Fort Vancouver, Oregon. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. 1.1,

Length .5 inches.

*Remarks.*—Professor Nuttall informs me that this species is common to the shores of the Columbia River. Young individuals very closely resemble *H. concava* (Say). In the older specimens the lip will at once distinguish it. The depression of the superior part of the outer lip is a remarkable character. In the older specimens the inferior and superior termination of the outer lip are joined by a remarkable callus.

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#### HELIX NUTTALLIANA. Plate XXIII. fig. 74.

*Testâ obtuso-conicâ, subtus planulatâ, umbilicatâ, longitudinaliter minutè striatâ, supernè luteâ, infernè tenebroso-fuscâ, propè carinam fasciatâ; anfractibus septenis; aperturâ subrotundatâ, intus fasciatâ; labro subreflexo; columellâ lævi.*

Shell obtusely conical, beneath flattened, umbilicate, longitudinally and minutely striate, above yellowish, below dark brown, near the carina banded; whorls seven; aperture nearly round, banded within; lip somewhat reflexed; columella smooth.

Hab. from Fort Vancouver down to the ocean, Oregon. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. 1.3,

Length .8 inches.

*Remarks.*—This may be considered to be the finest *Helix* found within the territory of the United States. It has little resemblance to any of our species yet known. It most resembles the *H. solitaria*, but is rather larger than that species. I owe to the kindness of Professor Nuttall two specimens—one is darker on the superior part than the other, being brownish. The dark band about the middle of the whorl is remarkable—above it are two indistinct bands.

## HELIX COLUMBIANA. Plate XXIII. fig. 75.

*Testâ obtuso-convexâ, infernè subrotundatâ, nitidâ, longitudinaliter striatâ, corneâ, diaphanâ, umbilicatâ; anfractibus senis, subrotundatis; aperturâ subrotundatâ; labro albo et reflexo, infernè subcalloso; columellâ lævi.*

Shell obtusely convex, rounded below, shining, longitudinally striate, horn-coloured, transparent, umbilicate; whorls six, roundish; aperture rather round; outer lip white and reflexed, slightly callous below; columella smooth.

Hab. Fort Vancouver, Oregon. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .7,

Length .4 of an inch.

*Remarks.*—One of the new shells brought by Professor Nuttall from his late expedition. It very closely resembles a small individual of *H. thyroideus* (Say), but may be distinguished by its having the striæ more distant, and in having a more depressed spire.

## HELIX MAGNIFICA. Plate XXIII. fig. 88.

*Testâ obtuso-conicâ, subcarinatâ, longitudinaliter striatâ, fasciis flammeis, rubris albisque pictâ, subtus seriebus pluribus punctorum rufescentium ornatâ, latè umbilicatâ; anfractibus quinis, supernè planulatis, infernè subconvexis; aperturâ transversâ; labro sinuoso, reflexo; columellâ lævi.*

Shell obtusely conical, subcarinate, longitudinally striate, with white and red flame-shaped bands, beneath furnished with many series of reddish spots, widely umbilicate; whorls five, above flattened, below rather convex; aperture transverse; outer lip sinuous, reflexed; columella smooth.

Hab. New Granada. J. H. Gibbon, M.D.

My Cabinet.

Diam. 2.7,

Length 1.2 inches.

*Remarks.*—This remarkably fine shell was among the collection

which I owe to Dr Gibbon. In many respects it very closely resembles the *H. pellis serpentis* (Lam.). It may, however, be at once distinguished from that species by its being striate and not granulate, a character in *pellis serpentis* not noticed by Lamarck, but which exists in all I have examined. It is also a much larger shell, and much more flattened above. The umbilicus is larger, and the area around it white. Beneath these are seven revolving lines, which are red and white spotted.

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PALUDINA SINISTROSA. Plate XXIII. fig. 78.

*Testâ sinistrosâ, ventricoso-conoideâ, subtenui, tenebroso-corneâ, striatâ, latè umbilicatâ; suturis impressis; anfractibus quinis, valdè convexis; aperturâ subrotundatâ, intus purpurascenti.*

Shell sinistral, ventricoso-conoidal, rather thin, dark horn-colour, striate, widely umbilicate; sutures impressed; whorls five, very convex; aperture nearly round, purplish within.

Hab. . . . East Indies. Miss Hodges.

My Cabinet.

Cabinet of Miss Hodges.

Diam. 1·1,

Length 1·3 inches.

*Remarks.*—This is the only sinistral species of *Paludina* which has come under my notice, and I am indebted to the kindness of Miss Hodges, of Salem, Massachusetts, for one of the two specimens which were in her fine cabinet. This species is so ventricose that it might be almost mistaken for an *Ampullaria*. It cannot, however, be confounded with that from the Nile (*Amp. carinata*, Caill.). The interior is purple brown, being at the edge of the lip bordered with white. Under the lens the longitudinal striæ will be observed to be very close and small.



## PALUDINA VIRENS. Plate XXIII. fig. 93.

*Testâ obliquâ, crassâ, subgranosâ, viridi; anfractibus subinflatis; aperturâ ovatâ.*

Shell oblique, thick, somewhat granose, green; whorls rather inflated; aperture ovate.

Hab. Wahlamat, near its junction with the Columbia river. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .2,

Length .4 of an inch.

*Remarks.*—The apices of all the specimens which Professor Nuttall gave me are destroyed, so that it is impossible to give some of the characters of this species. It is remarkably solid for so small a species.

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## PALUDINA NUCLEA. Plate XXIII. fig. 103.

*Testâ obtusè turritâ, corned, lævi; suturis impressis; anfractibus quinis; aperturâ albâ, ovatâ.*

Shell obtusely turrited, solid, horn-colour, smooth; sutures impressed; whorls five; aperture white, ovate.

Hab. Wahlamat, near its junction with the Columbia river. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .2,

Length .4 of an inch.

*Remarks.*—This is a small solid species, and is more oblique than *P. decisa* (Say). Like it, the apex is usually cut off. Round the mouth there is a black border, which contrasts with the pale horn-coloured epidermis.

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## PALUDINA NICKLINIANA. Plate XXIII. fig. 109.

*Testâ turrilatâ, viridi, lævi; apice obtuso; anfractibus quaternis, convexis; aperturâ ovalâ.*

Shell turrited, green, smooth; apex obtuse; whorls four, convex; aperture ovate.

Hab. Hot Springs, Virginia. P. H. Nicklin.

My Cabinet.

Cabinet of Mr Nicklin.

Diam. 2-20ths,

Length 3-20ths of an inch.

*Remarks.*—This shell, with several other species, was brought by Mr Nicklin from the Hot Springs of Virginia, and kindly placed in my cabinet. It lives in a rivulet, whose channel is supplied by the waters of a hot and a cold spring. The *Physa aurea* inhabits the same stream. It is the smallest species I know in our country, except the *granosa* of Say. It is rather larger, and very much resembles the *viridis* (Lam.). Its habitat, however, is very different, as the *viridis* lives in “cold fountains.”

## MELANIA TROOSTIANA. Plate XXIII. fig. 86.

*Testâ elevatâ, fuscâ, multistriatâ; apice acuto; anfractibus decem, suprâ carinatis; aperturâ ovalâ.*

Shell elevated, brown, thickly striated; apex acute; whorls ten, above carinate; aperture oval.

Hab. Mossy Creek, Jefferson County, Ten. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Cabinet of Mr Hyde.

Diam. .5,

Length 1.2 inches.

*Remarks.*—I owe to Professor Troost this interesting species. It differs from any American species with which I am acquainted, in hav-

ing a sharp carina, which is placed on the inferior part of the superior whorls. In its numerous striæ it resembles the *M. multilineata* (Say), which is now I believe acceded to be only a variety, much striated, of *M. virginica* of the same author. Most of the specimens which have come under my notice are white inside, with a purple spot on the columella, and an indistinct light band along the inferior part of the suture. Some individuals are, however, entirely purple inside, and this gives the epidermis quite a black appearance.

NOTE.—When I described a *Melania* under the name of *tuberculata*, I had not seen Spix's work on the fresh water shells of Brazil. Finding there the same name used for a *Melania*, mine must of course be changed, and I would propose the name of *Spixiana* for it.

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**MELANIA PLICIFERA. Plate XXIII. fig. 90.**

*Testâ acuto-turritâ, subcrassâ, tenebrosâ; spirâ pliciferâ; apice truncato; anfractibus convexiusculis, ultimo supernè lævi, infernè striato; aperturâ albâ.*

Shell acutely turrited, rather thick, nearly black; spire full of folds; apex truncate; whorls somewhat convex, the last being smooth above and striate below; aperture white.

Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .4,

Length 1.1 inches.

*Remarks.*—Among the fine shells brought by Professor Nuttall from beyond the Rocky Mountains, was this single species of *Melania*. It is remarkable for its numerous folds, or ribs, which fill the superior whorls. The inferior whorl is entirely without these ribs, but the inferior portion is furnished with transverse striæ. I am indebted to Professor Nuttall for many specimens of this shell, all of which are more or less truncate at the apex. The most perfect one, which is small, has nine whorls.

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CYCLOSTOMA POPAYANA. Plate XXIII. fig. 76.

*Testâ obtuso-convexâ, albidâ, pellucidâ, longitudinaliter striatâ, latè umbilicatâ, unifasciatâ; anfractibus quaternis; apice acuminato; labro acuto; operculo subcrasso.*

Shell obtusely convex, whitish, translucent, longitudinally striate, widely umbilicate, with a single band; whorls four; apex pointed; lip sharp; operculum rather thick.

Hab. New Granada, near Popayan. J. H. Gibbon, M.D.  
My Cabinet.

Diam. .8,

Length .5 of an inch.

*Remarks.*—Brought by Dr Gibbon from his recent expedition to South America. It very closely resembles *C. striata* (nobis), but may at once be distinguished by its longitudinal striæ, the *striata* being transversely striate. The specimens were generally worn. That which is represented is the only one which had any part of the epidermis remaining.

---

LYMNEA SOLIDA. Plate XXIII. fig. 91.

*Testâ elevato-conicâ, solidâ, lævi, corned; spirâ subturritâ; anfractibus quinis; columellâ reflexâ; aperturâ subovatâ.*

Shell acutely conical, solid, smooth, horn colour; spire rather turrit; whorls five; columella reflected; aperture subovate.

Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. 5-20ths,

Length 8-20ths of an inch.

*Remarks.*—A single specimen of this species was among the shells given to me by Professor Nuttall. It differs from any species which I know, in being more solid. In this specimen the interior is brownish.

*Continuation of Mr Lea's Paper. Read, July 21st, 1837.*

---

UNIO RANGIANUS. Plate XVIII. fig. 56.

*Testâ obliquâ, subcompressâ, valdè inæquilaterali; valvulis subcrassis; natibus prominentibus; dentibus cardinalibus parvis; lateralibus longis rectisque; margaritâ albâ.*

Shell oblique, somewhat compressed, very inequilateral; valves rather thick; beaks prominent; cardinal teeth small; lateral teeth long and straight; nacre white.

Hab. Ohio River, near Cincinnati. T. G. Lea.  
near Poland, Ohio. Dr Kirtland.

My Cabinet.

Cabinet of Mr Hyde.

Cabinet of Dr Kirtland.

Diam. .8,                      Length 1·2,                      Breadth 1·8 inch.

Shell oblique, somewhat compressed, flattened before the umbonal slope, very inequilateral; substance of the shell rather thick before, thinner behind; beaks prominent; ligament rather short; epidermis yellowish, covered with numerous green rays; cardinal teeth small; lateral teeth long and straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed on the inferior part of the cardinal tooth; cavity of the shell small; cavity of the beaks angular; nacre white.

*Remarks.*—This shell has been known to our naturalists for some years, and has usually been considered a variety of *U. perplexus* (nobis), without the tubercles. In some of their characters they agree entirely, and the female, in both, has the same spreading out of the posterior inferior portion, which is usually of a darker green. It is a smaller shell than *perplexus*, and may be distinguished at once by its want of tubercles and by its having nearly equidistant distinct marks of growth which are scarcely visible in the other. In some of its characters it re-

sembles *U. capsæformis* (nobis), but that shell is elliptical while this is oblique.

I owe to Dr Kirtland a fine suite of male and female specimens, and it was the examination of these which induced me to assign a distinct place for it among the species.

I name it after an ardent student of the Mollusca, Mons. Sander Rang.

---

ANODONTA PEPINIANUS. Plate XVI. fig. 51.

*Testâ trapezio simili, inqæuilaterali, transversâ; valvulis tenuibus; natibus prominentibus; clivo umboniali subelevato; epidermide striatâ; margaritâ albâ.*

Shell trapezoidal, inequilateral, transverse; valves thin; beaks prominent; umbonial slope rather elevated; epidermis striated; nacre white.

Hab. Lake Pepin, Portage County, Ohio. B. Tappan, Esq.  
My Cabinet.

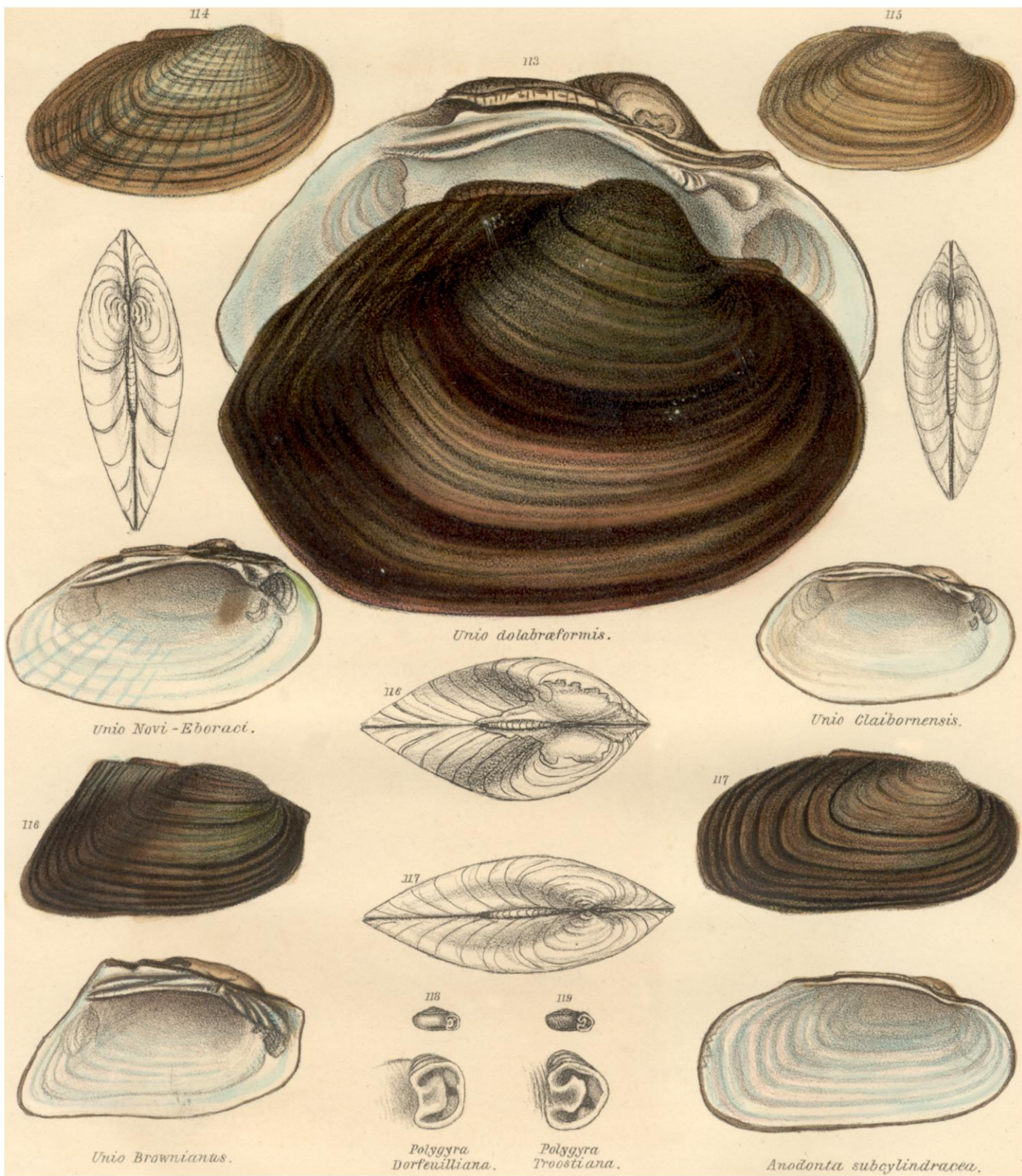
Cabinet of Judge Tappan.

Diam. .7, Length 1.2, Breadth 2 inches.

Shell trapezoidal, rather inflated, flattened on the sides, carinate behind, inequilateral, transverse; substance of the shell thin; beaks prominent; umbonial slope rather elevated and rounded; epidermis transversely striated, with the lines of growth strongly marked and apparently without rays. Anterior and posterior cicatrices both confluent; dorsal cicatrices in the centre of the cavity of the beaks; cavity of the shell rather deep; cavity of the beaks rather deep; nacre white.

*Remarks.*—I owe this shell to the kindness of my friend, Judge Tappan, who informs me that has observed it only in Lake Pepin. In its colour, and being fragile, it resembles the *An. fragilis* (Lam.). It may be distinguished from any of our species by its trapezoidal outline. The two specimens in my possession, are both in the nacre slightly incrustated with yellow spots. The smaller one being young and having the beaks perfect, exhibits numerous fine undulations at the tip.

The specimen represented is of the largest size which Judge Tappan has seen.





---

ANODONTA ANGULATA. Plate XVI. fig. 52.

*Testâ obovatâ, snbinflatâ, valdè inæquilaterali; valvulis subtenuibus, natibus subprominulis; clivo umbonialî carinato; epidermide luteolâ, subradiatâ; margaritâ albâ.*

Shell obovate, rather inflated, very inequilateral; valves rather thin; beaks somewhat prominent; umbonial slope carinate; epidermis yellow, somewhat radiated; nacre white.

Hab. Lewis's River. Professor Nuttall.

My Cabinet.

Diam. .8, Length 1.1, Breadth 2.4 inches.

Shell obovate, rather inflated, flattened before and behind the umbonial slope, very inequilateral; substance of the shell rather thin; beaks somewhat prominent; umbonial slope acutely carinate; epidermis yellow, obscurely radiated on the posterior slope dark green; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell rather deep and angular; cavity of the beaks shallow; nacre white.

*Remarks.*—A single valve, and that with a small fracture, of this species was brought by Professor Nuttall. It is very peculiar in possessing a carinate umbonial slope, and might, on account of this character, at first sight be mistaken for a wide specimen of *Margaritana marginata*. In this individual the cavity of the beak is salmon colour, but this may not be a permanent character. The anterior margin being small, and the posterior one large, gives it the outline of a *Modiola*.

Among the shells of this family brought from the Columbia River by this distinguished traveller and naturalist, were several specimens of *Margaritana margaritifera*. To find that this species inhabits the waters flowing into the Pacific, is of peculiar interest. Its being common to the European rivers and those of the United States flowing into the Atlantic, gave it an importance in regard to its geographical

distribution, which had attracted attention, as it is the only species which has been observed on both continents. Its discovery, now, in the Columbia River, adds much to that interest, as it proves it to exist on a very large portion of the circuit of our globe. It should be remarked that the nacre of these specimens is purple, a character not observed from other localities. In all other characteristics there is not apparently any difference whatever.

---

CAROCOLLA HYDIANA. Plate XXIII. fig. 73.

*Testâ orbiculatâ, utrinque convexâ, subfuscâ, minutè granulatâ, latè umbilicatâ; anfractibus quinis; aperturâ subtriangulatâ, plicis quaternis inæqualibus coarctatâ; marginibus connexis, reflexis, subrufis.*

Shell orbicular, on both sides convex, brownish, minutely granulated, widely umbilicate; whorls five; aperture subtriangular, contracted, with four unequal folds; margin continuous, reflected, reddish.

Hab. near Porto Cabello, S. A. J. H. Gibbon, M.D.

My Cabinet.

Cabinet of Mr Hyde.

Diam. 1·9,

Length ·9 of an inch.

*Remarks.*—I owe the possession of this fine shell to the kindness of Dr Gibbon. It resembles so closely *C. labyrinthus* (Lam.), that I have had some hesitation in proposing it as a new species. There appears, however, to be a difference in the form of the mouth, in the number of the teeth, and in the surface being minutely granulate. The figure in Wood's Catalogue (*H. plicata*, No. 27), is no doubt intended to represent Lamarck's *labyrinthus*, but the lower part of the mouth seems to be represented by three distinct folds. In some specimens of our shell the fourth tooth is wanting, and I presume this is owing to its immaturity. I have great pleasure in dedicating this species to my friend William Hyde, Esq.

---

**HELIX CALIFORNIENSIS. Plate XXIII. fig. 79.**

*Testâ globosâ, imperforatâ, granosâ, fuscâ, unifasciatâ; anfractibus quinis; aperturâ subrotundatâ; labro reflexo; columellâ lævi.*

Shell globose, imperforate, granose, brownish, single banded; whorls five; aperture nearly round; outer lip reflected; columella smooth.

**Hab. St Diego, Upper California. Professor Nuttall.**

**My Cabinet.**

**Cabinet of Professor Nuttall.**

**Diam. .7,**

**Length .6 of an inch.**

**Remarks.**—This species is remarkable for its globoseness and the single small dark band placed in the middle of a light and broader one immediately above the centre of the whorl.

---

**HELIX TOWNSENDIANA. Plate XXIII. fig. 80.**

*Testâ obtuso-conicâ, longitudinaliter striatâ, rugosâ, fuscâ, umbilicatâ; anfractibus quinis; aperturâ subrotundatâ; labro reflexo; columellâ lævi.*

Shell obtusely conical, longitudinally striate, rough, brownish, umbilicate; whorls five; aperture nearly round; lip reflected; columella smooth.

**Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.**

**My Cabinet.**

**Cabinet of Professor Nuttall.**

**Diam. 1,**

**Length .6 of an inch.**

**Remarks.**—In general form, and nearly in size, this species resembles *H. thyroïdus* (Say), but differs from it in being of a darker colour and in being rugose. Under the microscope minute transverse striæ may be observed. The lip is beautifully white, and the last whorl near its

termination yellow. I name it after Mr Townsend, who accompanied Professor Nuttall in his travels to the Pacific.

---

**HELIX NICKLINIANA.** Plate XXIII. fig. 84.

*Testâ subglobosâ, tenuiculâ, albidâ, longitudinaliter striatâ, nubilâ, perforatâ, unifasciatâ; anfractibus quinis; aperturâ rotundatâ; labro subreflexo; columellâ lævi.*

Shell subglobose, rather thin, whitish, longitudinally striate, clouded, perforate, single banded; whorls five; aperture round; lip slightly reflected; columella smooth.

**Hab.** St Diego, Upper California. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

**Diam.** .9,

**Length** .7 of an inch.

*Remarks.*—This species resembles *H. Californiensis* (herein described), but differs in being less globose and in having no broad light band, as well as in being larger. The whole shell, except the apex, is mottled, the inferior part of the whorls being lighter. In the specimens before me the umbilicus is very nearly closed.

---

**HELIX OREGONENSIS.** Plate XXIII. fig. 85.

*Testâ subcarinatâ, tenui, lævi, rufo-fusca, ad carinam bifasciatâ, supernè subconvexâ, infernè subinflatâ.*

Shell subcarinate, thin, smooth, reddish brown, double banded on the carina, above slightly convex, below somewhat inflated.

**Hab.** Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

**Diam.** .6,

**Length** .4 of an inch.

**Remarks.**—It is much to be regretted that Professor Nuttall was unable to procure a mature specimen of this beautiful species. The description being made from a young individual is, of course, defective. It is impossible to say whether it be umbilicate and whether it may possess a reflected lip when mature. It may also acquire a much larger size. It is remarkable for a dark brown and a white band on the carina. That part of the specimen which has the epidermis, presents in it, under the microscope, a remarkable waved appearance.

---

**SUCCINEA APERTA. Plate XXIII. fig. 107.**

*Testâ subrotundâ, tenui, flavescente, lævi; spirâ brevissimâ; anfractibus binis, ultimo grandissimo; aperturâ latissimâ.*

Shell subrotund, thin, yellowish, smooth; spire very short; whorls two, the last being very large; aperture very wide.

**Hab.** Banks of Columbia River. Professor Nuttall.

My Cabinet.

Cabinet of Professor Nuttall.

Diam. .4,

Length .5 of an inch.

**Remarks.**—This is one of the interesting shells brought by Mr Nuttall. It is remarkable for its fullness, for the size of the last whorl, and its mammiform apex, which is remarkably small.

---

**PALUDINA NUTTALLIANA. Plate XXIII. fig. 89.**

*Testâ subglobosâ, corneâ, lævi; suturis subimpressis; anfractibus quaternis; aperturâ albâ, subrotundâ.*

Shell subglobose, horn-coloured, smooth; sutures rather impressed; whorls four; aperture white, nearly round.

**Hab.** Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.  
Cabinet of Professor Nuttall.

Diam. .3, Length .4 of an inch.

*Remarks.*—There is a very close resemblance between this species and *P. nuclea* (herein described). It is, however, less oblique, larger, and less elevated in the spire.

---

LYMNEA APICINA. Plate XXIII. fig. 94.

*Testâ obtuso-conicâ, subsolidâ, lævi, corneâ; spirâ breviusculâ; anfractibus quaternis; columellâ reflexâ; aperturâ subovalâ.*

Shell obtusely conical, rather solid, smooth, horn-coloured; spire rather short; whorls four; columella reflected; aperture subovate.

Hab. Wahlamat, near its junction with the Columbia River. Professor Nuttall.

My Cabinet.  
Cabinet of Professor Nuttall.

Diam. .3, Length .4 of an inch.

*Remarks.*—This small species is rather more globose than usual. It is distinguished by a dark apex. Within the outer lip there is a dark brown band.

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*Continuation of Mr Lea's Paper. Read, January 5th, 1838.*

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UNIO DOLABRÆFORMIS. Plate XXIV. fig. 113.

*Testâ ellipticâ, inflatâ, inæquilaterali; valvulis crassis; natibus inflatis prominentibusque; epidermide lævi; dentibus cardinalibus sublamellatis; lateralibus longis lamellatisque; margaritâ albâ et iridescente.*

Shell elliptical, inflated, inequilateral; valves thick; beaks inflated and prominent; epidermis smooth; cardinal teeth somewhat lamellar; lateral teeth long and lamellar; nacre white and iridescent.

Hab. Altamaha River, Liberty County, Georgia. Lewis Leconte, Esq.

Hab. Altamaha River, near Darien. Professor Ravenel.

My Cabinet.

Cabinet of Major Leconte.

Cabinet of Professor Ravenel.

Diam. 2·1,                      Length 3,                      Breadth 4·5 inches.

Shell elliptical, inflated, inequilateral; substance of the shell thick, thinner on the posterior portion; beaks inflated and prominent; ligament rather short and very thick; epidermis brown, finely wrinkled, polished; umbonial slope somewhat carinate, obscurely rayed; cardinal teeth not very large, compressed; lateral teeth long, lamellar, curved, and separated from the cardinal teeth; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices very large, and placed on the inside of the plate between the cardinal and lateral teeth; cavity of the shell large and deep; cavity of the beaks large and subangular; nacre pearly white, iridescent, sometimes pinkish in the teeth and cavity of the beaks.

*Remarks.*—There is a group of *Uniones* to which this belongs, which have a close resemblance to each other in nearly all their characteristics. The *U. ovatus* (Say) may be considered the type of this



group, and it has been with some hesitation that I have added another species. The *dolabræformis* stands between *ovatus* (Say) and *occidens* (nobis), and when young I should suppose would resemble *U. globosus* (Lea). This shell was among those sent by Lewis Leconte, Esq. to his brother, to whom I am greatly indebted for the possession of many fine species. The strong resemblance this species bore to the *occidens* (nobis) induced me to defer, when I described the other new ones, the description of this for better specimens to decide upon. The acquisition of several fine ones from Professor Ravenel no longer left any doubt in my mind of the propriety of proposing it as a new species. The female shell, like the *occidens*, is very broad at the posterior margin.

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UNIO NOVI-EBORACI. Plate XXIV. fig. 114.

*Testâ ellipticâ, subcompressâ, inæquilaterali; valvulis subcrassis; natibus subprominentibus, ad apices undulatis; epidermide luteolâ, radiatâ; dentibus cardinalibus magnis erectisque; lateralibus longis rectisque; margaritâ albâ et iridescente.*

Shell elliptical, somewhat compressed, inequilateral; valves rather thick; beaks somewhat prominent, undulated at the tip; epidermis yellow and radiated; cardinal teeth large and erect; lateral teeth long and straight; nacre white and iridescent.

Hab. Oak Orchard Creek, Orleans County, New York. J. C. Jay, M.D.

My Cabinet.

Cabinet of Dr Jay.

Diam. .7,

Length 1.1,

Breadth 2.2 inches.

Shell elliptical, somewhat compressed, inequilateral; substance of the shell rather thick, thinner on the posterior portion; beaks somewhat prominent, and minutely undulated at the tip; epidermis yellow, with green rays nearly over the whole disk; cardinal teeth large, erect and deeply cleft in the left valve; lateral teeth long, straight, and separated from the cardinal teeth; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the centre of the cavity of the beaks; cavity of the shell shallow; cavity of the beaks sub-

angular and shallow ; nacre white, and very iridescent on the posterior portion.

*Remarks.*—This species more nearly resembles *U. iris* (nobis) than any other I am acquainted with. It is, however, a thicker shell, more angular behind, and not quite so transverse. The epidermis is more yellow. I am indebted to the kindness of Dr Jay for the specimen in my cabinet, from which the figure is taken.

---

UNIO CLAIBORNENSIS. Plate XXIV. fig. 115.

*Testâ ellipticâ, subinflatâ, inæquilaterali; valvulis crassis; natibus subprominentibus; epidermide luteolâ, lævi; dentibus cardinalibus parvis; lateralibus longis lamellatisque; margaritâ albâ et iridescente.*

Shell elliptical, somewhat inflated, inequilateral; valves thick; beaks somewhat prominent; epidermis yellow, smooth; cardinal teeth small; lateral teeth long and lamellar; nacre white and iridescent.

Hab. Alabama River, near Claiborne. Judge Tait.

My Cabinet.

Diam. .6, Length 1, Breadth 1.7 inches.

Shell elliptical, somewhat inflated, inequilateral; valves thick; beaks somewhat prominent; ligament rather long and thin; epidermis yellow, smooth, with a few obsolete rays; cardinal teeth small and compressed; lateral teeth long, lamellar, and nearly straight; anterior cicatrices distinct; posterior cicatrices confluent; dorsal cicatrices placed in the interior of the cavity of the beaks; cavity of the shell not very deep; cavity of the beaks small; nacre pearly white and iridescent.

*Remarks.*—Among the number of fine shells sent to me some years since by the late Judge Tait, was one whole specimen and an odd valve of this shell. In hopes of procuring more and better specimens, I delayed bringing it forward as a new species, and regret now to have to figure and describe an individual not mature, the odd valve being

considerably larger. It has a strong resemblance to *U. luteolus* (Lam.) and to *U. Hydianus* (nobis), but does not, like them, possess distinct rays.

---

**ANODONTA SUBCYLINDRACEA. Plate XXIV. fig. 117.**

*Testâ ellipticâ, inflatâ, subcylindraceâ, valdè inæquilaterali; valvulis tenuibus; natibus subprominentibus undulatisque; epidermide fuscâ; margaritâ subcæruleâ et iridescente.*

Shell elliptical, inflated, nearly cylindrical, very inequilateral; valves thin; beaks somewhat prominent and undulated; epidermis brown; nacre bluish and iridescent.

Hab. Oak Orchard Creek, Orleans County, New York. J. C. Jay, M. D.

My Cabinet.

Cabinet of Dr Jay.

Diam. .8, Length 1.1, Breadth 2.2 inches.

Shell elliptical, inflated, rounded at both ends, nearly cylindrical, very inequilateral; substance of the shell very thin; beaks somewhat prominent and minutely undulated at the tip; epidermis brown, and without rays; anterior cicatrices confluent; posterior cicatrices confluent; dorsal cicatrices not perceptible; cavity of the shell deep; cavity of the beaks very shallow; nacre bluish and iridescent.

*Remarks.*—This *Anodonta* resembles, particularly in an immature state, the *An. Ferussaciana* (nobis). It is not, however, so large a shell, and the beak is more terminal. The undulations of the beaks, which are nearly concentric, are also smaller. Dr Jay very kindly placed the shell above described at my disposal many months since.

---

**POLYGYRA DORFEUILLIANA. Plate XXIV. fig. 118.**

*Testâ supernè obtuso-conicâ, infernè subinflatâ, nitidâ, corneâ, longitudinaliter striatâ, latè umbilicatâ ; anfractibus senis ; aperturâ lunatâ, tridentatâ.*

Shell above obtusely conical, below somewhat inflated, shining, horn-colour ; longitudinally striate, widely umbilicate ; whorls six ; aperture lunate, three-toothed.

Hab. Ohio. Mr Dorfeuille, Cincinnati.

My Cabinet.

Diam. .3,

Length .2 of an inch.

*Remarks.*—I adopt Mr Say's genus *Polygyra*, believing the division, though very artificial, quite as good as many made by Lamarck. This species has, like *Polygyra fatigiata* (Say) and *P. plicata* (Say), one large tooth on the left lip and two smaller ones on the right lip. It differs from the first in not being carinate, from the last in being larger and having larger striæ. In the *Dorfeuilliana* the tooth on the left lip is large and square, with an indentation in the centre. The view into the mouth is nearly obstructed by the teeth, leaving, to appearance, three nearly square apertures. The superior part of the shell is striate, while the inferior part is nearly smooth, and exhibits two volutions. I have seen but a single specimen, which I believe is the only one obtained by Mr Dorfeuille, who obligingly sent it to me.

**POLYGYRA TROOSTIANA. Plate XXIV. fig. 119.**

*Testâ supernè subplanulatâ, infernè subinflatâ, corneâ, longitudinaliter striatâ, latè umbilicatâ ; anfractibus senis ; aperturâ lunatâ, tridentatâ.*

Shell above nearly flat, below somewhat inflated, horn-coloured, longitudinally striate, widely umbilicate ; whorls six ; aperture lunate, three-toothed.

Hab. Tennessee. Professor Troost.

My Cabinet.

Cabinet of Professor Troost.

Diam. .4,

Length .2 of an inch.

*Remarks.*—This species strongly resembles *P. Dorfeuilliana*, herein described, being nearly of the same size, and possessing most of its characters. It differs, however, in the large solid tooth on the left lip being more angular, and in the two teeth on the right lip being somewhat differently placed. In the striæ it differs much, these being larger, much better defined, and passing entirely over the whorls. In the umbilicus it is wider, and shows more of the two whorls. This shell forms the fourth of a group, the form of the apertures of which is exceedingly alike, viz. *P. fatigiata* (Say), *P. plicata* (Say), and *P. Dorfeuilliana* (nobis).

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*Continuation of Mr Lea's Paper. Read, January 19th, 1838.*

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UNIO BROWNIANUS. Plate XXIV. fig. 116.

*Testâ trigonâ, inflatâ, valdè inæquilaterali, alatâ ; valvulis crassis ; natibus prominentibus ; epidermide striatâ ; dentibus cardinalibus subgrandibus ; lateralibus longis ; margaritâ albâ.*

Shell triangular, inflated, very inequilateral, winged ; valves thick ; beaks prominent ; epidermis striated ; cardinal teeth rather large ; lateral teeth long ; nacre white.

Hab. River Amazon, South America. Captain George Brown.

My Cabinet.

Cabinet of Captain Brown.

Diam. 1,                      Length 1,                      Breadth 2 inches.

Shell triangular, inflated, very inequilateral, winged on the posterior part ; substance of the shell thick ; beaks prominent ; ligament rather long and thin ; epidermis dark brown, finely striate, and polished on the umbones ; umbones inflated ; umbonial slope carinate ; cardinal teeth rather large and striate ; lateral teeth long and nearly

straight; anterior cicatrices distinct, the smaller being situated *above* the large one; posterior cicatrices confluent; dorsal cicatrices very small; cavity of the shell rather deep; cavity of the beaks shallow.

*Remarks.*—This shell belongs to Lamarck's genus *Hyria*, which, in my proposed arrangement, I have placed among the *Uniones* having one cardinal and one lateral tooth. I am induced to believe in the propriety of this remaining so, until we shall have a better knowledge of the whole family, and of course a natural arrangement. In a previous memoir\* I noticed the fact, that in the genus *Hyria* the cicatrix of the extensor muscle was placed over that of the anterior adductor muscle. In the *Brownianus* we find them in the same relative position.

I am indebted to Captain Brown for the examination of three specimens of this species, which he brought from the Amazon, with the other two species already known to exist there. It most resembles *H. syrmatophora*, but differs from it in being more transverse, being less carinate, having a shorter cardinal tooth, which is more striate, and in having a wing much less elevated. The umbones are also more inflated before the umbonial slope. It may be proper to remark here, that in some individuals of the genus *Hyria* an imperfect crenulation of the lateral tooth may be found, somewhat similar to the genus *Castalia* (Lam.), and this is the case with one of the specimens of the species proposed above.

\* Vol. IV., p. 67.

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OF

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*Continuation of Mr Lea's Paper.*

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## SYNOPSIS

OF

## THE FAMILY OF NAIADES.

THE following table of arrangement and synonymy was undertaken purely with the view and in the hope of clearing away the difficulties which had incumbered one of the most interesting families of the Mollusca. In this attempt the author met, while pursuing his task, with obstructions and difficulties which he little anticipated at its commencement. The want of some of the books of reference, and the confusion which reigned throughout many of them, sometimes presented obstacles which seemed almost insurmountable. In attempting to establish the synonymy, he has endeavoured to render the strictest justice, and if in any case it is found he has failed to do this, it will be a matter of sincere regret to him.

In the following tables there will be found in the family 323 recent species as admitted, 29 unknown to me or doubtful, and 22 fossil; in all 374.

Of the subgenus *Unio*, there are 235 species in a recent state, and 20 which I have not been able to admit as certain; of fossil species 21.

Of the subgenus *Margaritana* there are 20 admitted species, and 2 which are unknown to me.

Of the subgenus *Dipsas* I know of but 2 species, both of which are recent.

Of the subgenus *Anodonta* there are 58 admitted species, and 7 which are unknown to me. Of fossil species there is one which is doubtful.

The subgenus *Iridina* has 2 species, both recent.

The subgenus *Spatha* has 6 species, all recent.

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Most of the distinguished authors who have written on the subject of the division of the Family *Naiades* of Lamarck, have acknowledged the extreme difficulty they have encountered in separating it into subdivisions. This difficulty is not peculiar to the *Naiades*. In most of the families where a great number of species have been observed, we find these species so merging, and in some of their characters so fading away into each other, that we scarcely know how, indeed in some instances it is impossible, to make the separation with precision. "Natura non facit saltum." In the vegetable kingdom the same obstructions to a system are encountered. The observations of Lindley\* are so just and philosophic, that I cannot refrain from quoting them here:—

"Species are created by Nature herself, and remain always the same, in whatever manner they may be combined: they form the basis of all classification, and are the only part of it which can be considered absolute. For although in a natural system, all other combinations, whether genera, tribes, orders, or by whatever name they may be known, comprehend species agreeing much more with each other than with any thing else, and having a positive general resemblance in the majority of their features, yet no fixed limits can be assigned to any of

\* See Introd. to Botany, p. 307.

them; on the contrary, they pass, by means of various intermediate species, into the other genera, tribes, orders, &c., to which they are most nearly allied. For this reason, viz., that no fixed limits can be assigned to orders, genera, &c., we find the ideas about them fluctuating with the degree of our knowledge; which is the true cause of those changes in the limits of genera, &c., which persons unacquainted with the subject are apt to consider arbitrary; but which, in skilful hands, are dependent upon a progressive advance in the knowledge of science."

Blainville, in his "Manuel de Malacologie," divides the *Naiades* (his *Sub-Mytilacea*) into *Anodonta* and *Unio*, but thinks that species will be found which will make these to be united.\*

Sowerby says, "the difficulty of ascertaining to which genus of Lamarckian *Naiades* certain species belong, arises from the very general similarity of form," &c.; "in fact, an examination of a sufficient number of species will prove that no dependence can be placed upon the characters by which authors usually attempt to discriminate between these genera, and that the transition from one to another is so gradual in some instances, and so strongly marked in others, that it is not surprising that authors who having only met with certain species, and not being aware of such intermediate links, should have considered them as the types of new genera."† And further, "we think we have already said enough to prove, that unless it be thought wise to elevate each of the peculiar sorts we have mentioned, and many more, into distinct genera, it will be positively necessary to unite them altogether under one generic appellation." Swainson (Zool. Illus., second series) divides this family into *Unio*, *Hyria*, *Iridina*, *Anodon*, and *Alasmodon*, but in describing *An. areolatus* speaks of the genera gliding into each other.

Deshayes, in his edition of Lamarck's "Animaux sans Vertebres," says it is impossible to separate the genera of the *Naiades*. "Nous pourrions prendre pour exemple celui des genres qui est considéré comme l'un des mieux caractérisés. Le genre *Symphynote* est fondé sur ce caractere remarquable que les deux valves sont soudées entre elles le long du bord superieur," etc. "Nous concluons que tout ce grand

\* See page 540.

† Zool. Journ. Vol. I.

ensemble ne peut et ne doit former qu'un seul genre constituant a lui seul la famille des *Naiades*.”\*

It might be expected that some attempt of the application of M'Leay's circular system should be made in regard to this family. Swainson says that “the progression of every natural series is in a circle.”† In my attempts to verify this, I have not been successful. That the same idea exists in the construction of species is evident through a great number, but that this idea is returned to the point at which it commenced I am not prepared to admit.

To form a systematic, and, so far as possible, a natural arrangement of this family, has long occupied my serious attention.

I was, from my first knowledge of the family, struck with the very different aspect of the winged species, and, taking the hint of Lamarck,‡ I thought that an important division could be made by separating the connate from the free shells, and proposed the name of *Symphynota* for such as were connate. I was not satisfied at that time in separating a genus of this family by a character differing from that of the teeth, but presumed that the family would be taken up by some one, if not by myself, and that the first division of it would be symphynote and non-symphynote *Naiades*. The numerous new species which have been made known since, have satisfied me that this character cannot be so extensively and usefully applied as I then thought it could, and that it is not in fact free from the same objection which pervades so many generic characters as adopted by the most intelligent naturalists, viz. that perfect fading and mingling of character which interferes with all the systems yet formed.

\* Vol. VI. p. 526.—I will be excused in taking this opportunity to correct an erroneous impression on the mind of M. Deshayes. He says that I was not able to examine the collection of the Museum of Paris. “Malgré cette imperfection qu'il ne pouvait empêcher, le travail de M. Lea se recommande à l'attention des naturalistes par ces observations judicieuses, des descriptions exactes,” etc. It would be strange, indeed, if after spending so many years in the study of this family, that I should neglect, while in Paris, to see the collections from which Lamarck made so many descriptions. I was frequently at the museum, and on one particular occasion, by appointment of MM. Blainville and Ferussac, arranged, in the presence of these and other gentlemen, all the species of the *Naiades* that were in the museum, and named them; and also presented to the museum about fifteen species which were new to that great national institution. I also did the same thing for Baron Ferussac, having designated every specimen in his cabinet belonging to this family.

† Swainson, in Lard. Cycl. Nat. Hist. p. 247.

‡ Vol. VI. p. 76.

Sowerby, after examining into the propriety of dividing the family into genera, came to the conclusion of keeping but one genus, viz. *Unio*: this he divided into A without teeth, B with teeth. These he subdivided into winged and not winged. Another subdivision followed these, on the presence, form, and absence of teeth. There is evidently much merit in this division; but it is not perfect; nor ought we to expect perfection, I believe, in any system. Ferussac informed me, when in Paris, that he proposed to consider the Family *Naiades* to consist of one genus, *Margaritifera*, which genus he divides into the following subgenera: 1. *Anodonta*; 2. *Iridina*; 3. *Dipsas*; 4. *Triquetra*;<sup>\*</sup> 5. *Alasmodonta*; 6. *Unio*.

In Vol. 3 of our Trans. p. 398, Mr Nicklin expresses the opinion "that the seven genera, now referred to the family of *Naiades*, are founded in artificial distinctions, and not in nature; and that in fact the family contains but one genus."

After mature reflection, I have come to the conclusion, in forming this systematic arrangement and catalogue, to divide the family into two genera, *Margarita* and *Platiris*, and both of these into *subgenera*. Under this system, the best place for the symphynote shells would be a division of the subgenera into Symphynote and Non-Symphynote.

<sup>\*</sup> Klein. This it would appear Baron F. intended should embrace my genus *Symphynota*, as he included all he knew of them except *S. bialata*.

FAMILY NAIADES.	I. GENUS MARGARITA.	1. Subgenus Unio, Having a cardinal and lateral tooth.	{ Symphynote—Unio alatus, <sup>a</sup> &c. Non-Symphynote—U. picto- rum, <sup>b</sup> &c.
		2. Subgenus Margaritana, Having one tooth (cardinal).	{ Symphynote—Alas. compla- nata, <sup>c</sup> &c. Non-Symphynote—Alas. un- dulata, <sup>d</sup> &c.
		3. Subgenus Dipsas, Having a linear tooth under the dor- sal margin.	{ Symphynote—Dipsas plica- tus. <sup>e</sup>
		4. Subgenus Anodonta, Having no teeth.	{ Symphynote—Sym. magni- fica, <sup>f</sup> &c. Non-Symphynote—An. flu- viatilis, <sup>g</sup> &c.
	II. GENUS PLATIRIS.	1. Subgenus Iridina, Having a crenulate dorsal margin.	{ Non-Symphynote—I. exoti- ca. <sup>h</sup>
		2. Subgenus Spatha, Having the dorsal margin non-cre- nulate.	{ Non-Symphynote—I. Niloti- ca. <sup>i</sup>

After the divisions of Symphynote and Non-Symphynote shells, we have what appears to me four very natural subdivisions, viz.

<sup>a</sup> Of Say.

<sup>b</sup> Of Lamarek.

<sup>c</sup> Of Barnes.

<sup>d</sup> Of Say.

<sup>e</sup> Of Leach. Only two species yet known, this and *S. discoidea*, Lea.

<sup>f</sup> Lea.

<sup>g</sup> *Mytilus fluviatilis*, Sol., Dill. &c. *An. cataracta*, Say.

<sup>h</sup> Of Lamarek.

<sup>i</sup> Of Sowerby.



- |                      |                     |
|----------------------|---------------------|
| 1. Plicate shells.*  | 3. Spinous shells.† |
| 2. Nodulous shells.‡ | 4. Smooth shells.§  |

Each of these subdivisions may be again separated, according to the form of their outline, thus:

- |                             |                            |
|-----------------------------|----------------------------|
| 1. Quadrate. <sup>a</sup>   | 6. Subrotund. <sup>f</sup> |
| 2. Triangular. <sup>b</sup> | 7. Wide. <sup>g</sup>      |
| 3. Oblique. <sup>c</sup>    | 8. Obovate. <sup>h</sup>   |
| 4. Oval. <sup>d</sup>       | 9. Arcuate. <sup>i</sup>   |
| 5. Oblong. <sup>e</sup>     |                            |

The shell is supposed to be lying on its side with the ligament furthest removed from the observer, and the beak to the right of it. The base will of course be nearest to him, and the anterior margin to his right, while the posterior margin will be to the left. This is my mode of arranging my whole cabinet, which contains over 2100 specimens of this family, each differing in some character or locality.

In attempting to make a complete synopsis of the *Naiades*, much labour has necessarily been expended. I do not present this as a perfect work, but it has been made as much so as the opportunities in my possession permitted. Errors may have arisen from two sources: first, default of judgment; second, from accident, owing to the mass of research necessary to accomplish the object, considering the crude state

\* As *Unio plicatus*. *Lesueur*.

† As *Unio pustulosus*. *Lea*.

‡ As *Unio spinosus*. *Lea*.

§ As *Unio complanatus*. (*U. purpureus*. *Say*.)

No regard of course is paid in this division to the folds or undulations of the beaks, as all the species are more or less disposed to this character.

<sup>a</sup> As *U. asperrimus*. *Lea*.

<sup>b</sup> As *U. triangularis*. *Barnes*.

<sup>c</sup> As *U. clavatus*. *Lam*.

<sup>d</sup> As *U. crassus*. *Say*.

<sup>e</sup> As *U. complanatus*. *Solander*.

<sup>f</sup> As *U. circulus*. *Lea*.

<sup>g</sup> As *U. rectus*. *Lam*.

<sup>h</sup> As *U. modioliformis*. *Lea*.

<sup>i</sup> As *M. margaritifera*. (*Al. arcuata*. *Barnes*.)

the subject was in. I shall be most agreeably disappointed if there be not parts pointed out as erroneous which are substantially correct. It will be observed that the works of M. Rafinesque are but little quoted. This has arisen from the utter impossibility of satisfying myself as to his species, causing me at an early period to abandon the task of making out his very imperfect descriptions. His own discrepancy in the names sent to Ferussac,\* and those which are attached to specimens here, together with the want of accordance in the tables made out by his friends, have induced me to regard his claims as being too slender to rely upon the decisions, so contradictory, of the several parties, in the absence of the individual specimens noted. In the absence of these specimens, which no naturalist has, I believe, ever seen but the Professor, I feel myself compelled to prefer other authorities, which are now almost universally received by our men of science. I am the more fortified in this conclusion, when I see that his most ardent advocate acknowledges that he has made six species from a single one;† and the absurdity is still stronger when we turn to Professor R.'s monograph, and find that this single species has furnished *several genera*, and is placed in fact in *two different sub-families!!!*

In regard to the Catalogue published last year by Baron Ferussac, in which he gives precedence to many of Professor Rafinesque's names, it must be remembered that this has been done on the authority of others, and not from the inspection of the subjects themselves. Had he known the manner in which these claims had been brought forward, he certainly would have admitted them with doubt.

\* "Les erreurs involontaires qui échappent à M. Rafinesque dans ses envois augmentent aussi la difficulté de reconnaître ses espèces. Nous avons reçu de lui les mêmes coquilles sous différents noms, et d'autres avec les noms évidemment autres que ceux qu'elles portent dans sa Monographie. Il en est résulté une difficulté inextricable pour la détermination de ses espèces, et pour pouvoir établir une synonymie exacte entre lui et les autres qui, depuis, se sont occupés des Mulettes."—*Magasin de Zoologie*, p. 13.

† Conrad's Synoptical Table on New Fresh Water Shells of the United States, p. 72. *U. triangularis*.

FAMILY NAIADES.—*Lamarck*.

## GENUS MARGARITA.

## I. SUBGENUS UNIO.

SYMPHYNOTE UNIONES.		SYMPHYNOTE UNIONES.	
PLICATE.	TRIANGULAR.	SMOOTH.	TRIANGULAR.
	<p>*angulatus. <i>Lea</i>.†  <i>Hyria corrugata</i>.‡ <i>Lam.</i> <i>Sow.</i>  <i>Mya angulata</i>. <i>Wood.</i>  <i>Unio corrugata</i>. <i>Blain.</i>  <i>Unio rugosus</i>. <i>Wagner</i>.§  <i>Paxyodon ponderosus</i>. <i>Schum.</i>  <i>Triplodon rugosus</i>. <i>Spix</i>.§</p> <p><i>gigas</i>. <i>Lea.</i>  <i>Lymnadia gigas</i>. <i>Swain.</i></p> <p>*inflatus. <i>Lea.</i>  <i>Symph. inflata</i>. <i>Lea</i>, in Trans. Am.  P. S.</p> <p>*alatus. <i>Say.</i>  <i>Unio alatus</i>. <i>Say.</i> <i>Lam.</i> <i>Swain.</i>  <i>Bar.</i> <i>Hild.</i>  <i>Mya alata</i>. <i>Wood.</i>  <i>Symph. alata</i>. <i>Lea</i>, Trans. Am. P. S.</p> <p>*syrmatophorus. <i>Lea.</i>  <i>Mya syrmatophora</i>. <i>Gronovius.</i> <i>Gmel.</i>  <i>Wood.</i> <i>Dill.</i></p>		<p><i>Hyria avicularis</i>. <i>Lam.</i> <i>Crouch.</i>  <i>Hyria syrmatophora</i>. <i>Sow.</i>  <i>Hyria elongata</i>?   <i>Swain.</i>  <i>Unio caudatus</i>.§ <i>Wagner.</i>  <i>Prisodon obliquus</i>. <i>Schum.</i>  <i>Prisodon truncatus</i>. <i>Schum.</i>  <i>Diplodon furcatum</i>.§ <i>Spix.</i></p> <p>*Brownianus. <i>Lea.</i></p> <p>*lævissimus. <i>Lea.</i>  <i>Symph. lævissima</i>. <i>Lea</i>, in Trans.  Am. P. S. <i>Eaton.</i>  <i>Unio lævissima</i>. <i>Deshayes.</i></p> <p>*gracilis. <i>Barnes.</i> <i>Hild.</i>  <i>Unio planus</i>. <i>Barnes.</i>  <i>Unio fragilis</i>. <i>Swain.</i>  <i>Symph. gracilis</i>. <i>Lea</i>, in Trans. Am.  P. S. <i>Eaton.</i></p> <p>*compressus. <i>Lea.</i>  <i>Symph. compressa</i>. <i>Lea</i>, in Trans.  Am. P. S.</p>

\* All the species preceded by an \* are in my Cabinet. The inner column forms the Synonyms.

† It will be observed, throughout this *Synopsis*, that where any change has been made of generic or specific names, that I have placed my name there. This is not done with a view to claim any merit, but in accordance with that which is usually done. The object is to show the author of the change, and nothing further.

‡ This specific name having been used by the older conchologists, as well as Lamarck, for a shell from India (*Unio corrugata*), it becomes necessary, as I retain that as the older, to change this, which I do to Wood's name.

§ On the authority of Ferussac.

|| Mr Gray thinks this to be a "perfectly distinct species." I have never seen the shell, and feel too much in doubt to insert it as such.

## QUADRATE.

\*Nicklinianus.† *Lea*.\*cœlatus. *Con*.\*multiplicatus.‡ *Lea*.Unio heros. *Say*, in Disseminator.Unio undulatus. *Say*, Am. Conch.  
No. 2. *Deshayes*.Unio heros. *Say*, Am. Conch. No. 6.\*undulatus. *Bar. Valen. Hild. Desh.*Unio costata? *Raf.*Unio costatus. *Con*.\*plicatus. *Lesueur. Say. Bar. Eat. Hild.*Unio Peruviana. *Lam.*Unio rariplicata. *Lam.*Unio Dombeyanus. *Valen.*Unio undulata. *Desh.*Unio multiplicata. *Desh.*\*trapezoides. *Lea*.Unio crassidens. *Lam. Var. a.*Unio interruptus.§ *Say*.

## TRIANGULAR.

\*ambiguus. *Lea*.Castalia ambigua. *Lam. D'Orb.*Unio ambigua. *Blain. Desh. Sow.*Mya ambigua. *Wood.*Tetraplodon pectinatum. *Spix.*

## TRIANGULAR.

Cast. quadrilatera.‖ *D'Orb.*Cast. inflata. *D'Orb.*\*foliatus.¶ *Hild.*Unio flexuosa? *Raf.*Unio flexuosus. *Con.*, in text, Monograph, page 8.Unio foliatus. *Con.*, in plate 4, Monograph.

## OVAL.

\*pliciferus. *Lea*.

## WIDE.

\*multistriatus. *Lea. D'Orb.*Diplodon ellipticum? *Spix.*\*subtentus. *Say. Con.*\*Conradicus. *Lea*.\*acutissimus. *Lea*.\*Murchisonianus. *Lea*.Unio Douglasiæ. *Gray.*\*Grayanus. *Lea*.

## ARCULATE.

ponderosus. *Lea*.Mya ponderosa. *Solan. Dill.*Mya crassa. *Wood.*

† This distinct and beautiful species was described from a single valve not entirely perfect. When the whole shall be found perfect, I think it likely to prove symphynote.

‡ When I described the *multiplicatus* in 1830, I had had several specimens for two or three years, and was not aware that Mr Say had published a shell under the name of *heros*, which he subsequently abandoned as the *undulatus* of Barnes; but in 1834 reclaimed as *heros*. I consider that Mr Say's abandonment of the species entitles me to it, if my previous claim be not sufficient.

§ Mr Say, in his "Synonymy," claims precedence in this species, although my Memoir bears date May 1830, while his is December 1831. (See *Transylvania Journal*, Vol. V.) The reader will not after this be surprised to be told that Mr Say does not allow me, in his very incorrect "Synonymy," to be the discoverer of a single new species of *Unio* from our western waters!! I may be allowed also to state, that I do not understand why he gives the same name to two of his different numbers: thus, he calls No. 17, *U. interruptus*, Rafin.; and No. 47, *U. interruptus*, Say. The species are evidently distinct.

‖ I owe to the kindness of M. D'Orbigny specimens of this and *inflata*. I regret, however, that I am compelled to differ in opinion with this distinguished naturalist, believing, as I do, that there has been as yet observed but one species of Lamarck's *Castalia*.

¶ The male of *foliatus* is certainly a triangular shell—the female differs in form very much, having a deep

NON-SYMPHYNOTE UNIONES.	NODULOUS.	QUADRATE.	NON-SYMPHYNOTE UNIONES.	NODULOUS.	TRIANGULAR.
		*lacrymosus.† <i>Lea.</i>			*cornutus. <i>Bar.</i>
		*asperrimus.‡ <i>Lea.</i>			Unio reflexa? <i>Raf.</i>
		Unio quadrulus. <i>Say.</i>			Unio reflexus. <i>Con.</i>
		*fragosus.§ <i>Con.</i>			SUBROTUND.
		Phillipsii. <i>Con.</i>			*pustulosus. <i>Lea.</i>
		*pustulatus. <i>Lea.</i>			Unio verrucosus. <i>Bar. Var. b.</i>
		*Schoolcraftensis. <i>Lea.</i>			Unio verrucosa. <i>Valen.</i>
		Unio prasinus. <i>Con.</i>			Unio verrucosus albus. <i>Say; but</i> not of <i>Hildreth.</i>
		TRIANGULAR.			*turgidus. <i>Lea.</i>
NON-SYMPHYNOTE UNIONES.	NODULOUS.	*apiculatus. <i>Say.</i>		NODULOUS.	Unio Mortoni. <i>Con.</i>
		*asper. <i>Lea.</i>			*Cooperianus. <i>Lea.</i>
		*Dorfeuillianus. <i>Lea.</i>			*verrucosus. <i>Bar. Eat.</i>
		*stapes. <i>Lea.</i>			Unio tuberculata? <i>Raf.</i>
		*metanevra. <i>Lea.</i>			Unio tuberculosa. <i>Valen.</i>
		Unio metanevra. <i>Raf.</i>			Unio verrucosus purpureus. <i>Hild.</i>
		Unio nodosus. <i>Bar.</i>			Unio tuberculatus. <i>Con.</i>
		Unio rugosus (Flat). <i>Bar.</i>			*graniferus. <i>Lea.</i>
		Unio metanevrus. <i>Con.</i>			*nodulosus. <i>Lea.</i>
					Mya nodulosa.¶ <i>Wood. Dill.</i>
NON-SYMPHYNOTE UNIONES.	NODULOUS.			NODULOUS.	*irroratus. <i>Lea. Eaton.</i>
					Unio verrucosus albus. <i>Hild.</i>

inflection on the posterior basal margin. It may be doubted if this should be considered a plicate shell. I consider that the folds of the growth, particularly in the male shells, require it to be placed here.

† It is a matter of some doubt if this be more than a beautiful variety of *asperrimus* (nobis). Future observation must determine. Ferussac and some other zoologists believe it to be distinct. Dr Ward says they "are certainly distinct."

‡ Mr Say supposed this to be the *rugosus*, Barnes. Two specimens referred to by Mr B. as *rugosus* were under my inspection, and proved to be—the one a flat *metanevra*, Rafin., the other a *plicatus* (Lesueur). Mr B. in his reclamation recognises his *rugosus* as *U. Peruviana*, Lam., which shell is undoubtedly the *plicatus*, (Lesueur and Say).

§ This shell has been considered the female of *asperrimus* (nobis), but I am, after the examination of many specimens, disposed to think it to be distinct. Some of our best western naturalists think it to be the true *rugosus* of Barnes.

|| A specimen sent to me by Dr Hildreth as *Unio verrucosus albus*, proved to be a true *irroratus* (nobis).

¶ This shell, as figured by Wood in his "General Conchology," seems to me to be distinct from the *pustulosus* (nobis), with which it has been confounded. The figure of Wood is longer than any *pustulosus* I have seen, and the epidermis is much darker ("bottle green"). The nodules are more numerous about the beaks, and the lateral tooth is longer and thicker. I doubt if the *nodulosus* be an American species.

NON-SYMPHYNOTE UNIONES.	NODULOUS.	SUBROTUND.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	SPINOUS.	WIDE.
		* <i>dromas</i> . <i>Lea</i> .				* <i>spinosus</i> . <i>Lea</i> .
		OBLIQUE.				QUADRATE.
		* <i>Æsopus</i> . <i>Green</i> .				* <i>arcæformis</i> . <i>Lea</i> .
		<i>Unio cicatricosus</i> . <i>Con.</i> ; not of <i>Say</i> .				<i>Unio nexus</i> . ‡ <i>Say</i> .
		<i>Unio varicosus</i> . <i>Con.</i> ; not of <i>Lea</i> .				TRIANGULAR.
		* <i>varicosus</i> . <i>Lea</i> .				* <i>triangularis</i> . <i>Bar.</i> <i>Eat.</i> <i>Hild.</i> <i>Say</i> .
		<i>Unio cicatricosus</i> ? <i>Say</i> . †				<i>Unio formosus</i> . § <i>Lea</i> . (Male.)
		* <i>perplexus</i> . <i>Lea</i> .				<i>Unio cuneatus</i> . <i>Swain</i> .
		<i>Unio gibbosus</i> ? <i>Raf.</i>				* <i>elegans</i> .    <i>Lea</i> .
		<i>Unio gibbosus</i> . <i>Con.</i>				* <i>donaciformis</i> . ¶ <i>Lea</i> .
		WIDE.				* <i>zigzag</i> . <i>Lea.</i> <i>Eat.</i>
		* <i>Leaii</i> . <i>Gray</i> .				* <i>heterodon</i> . <i>Lea</i> .
		* <i>granosus</i> . <i>Brug.</i> <i>Lam</i> .				* <i>penitus</i> . †† <i>Con</i> .
		* <i>tuberculatus</i> . <i>Bar.</i> <i>Eat.</i> <i>Hild</i> .				* <i>securis</i> . <i>Lea.</i> <i>Eat</i> .
		<i>Novæ Hollandiæ</i> . <i>Gray</i> .				<i>Unio depressa</i> . ††† <i>Raf.</i> ; but not of <i>Lam</i> .
		* <i>cylindricus</i> . <i>Say.</i> <i>Eat.</i> <i>Hild</i> .				
		<i>Unio naviformis</i> . <i>Lam.</i> <i>Blain.</i> <i>Valen</i> .				

† Never having seen the specimen described by Mr Say as *cicatricosus*, I am unable to decide if it be the same with *varicosus* (nobis). Two things mentioned by Mr Say induce me to doubt it. He calls his "a common species," and says it is "distinguishable by the single series of transverse elevations on the middle." The latter remark does not apply to *varicosus*, and I have always deemed it a rare shell.

‡ Say and Conrad both commit the error of giving precedence to *nexus*. My description of *arcæformis* is in my memoir, read before the American Philosophical Society May 20, 1831, while Mr Say's was first described in the Transylvania Journal of December 1831. Subsequently he republished it in his American Conchology, No. 6, where he places erroneously the date of 1832 to my memoir.

§ Mr Barnes's description of *triangularis* was made from a female shell, and mine of *formosus* from the male. There being an obvious distinction of the sexes in every specimen, my error was a very natural one, as we were not at the time acquainted with the sexual differences in the *Naiades*.

|| Mr Say thinks that Mr Barnes's *undulatus*, Var. *a*, is the same with *elegans*. I think differently, and would fortify my opinion in the fact, that Mr B. does not mention the zigzag rays which are strikingly singular in the *elegans*, and could not have failed to have elicited his remarks had it been under his eyes.

¶ I have expressed my doubts, Transactions of the American Philosophical Society, Vol. IV., page 84, (page 94 in "Observations on the Genus Unio," &c.), if this be more than a fine variety of *zigzag* (nobis). Mr Say gives it as a synonym to *nervosus*, Raf., and Mr Conrad as *truncata*, Raf.

†† I received from Judge Tait of Alabama, in 1830, several specimens of this species, but they were not sufficiently perfect to induce me to publish them. Mr Conrad does not mention the rays, a very peculiar character of which is their being dotted somewhat like those of *securis* (nobis), but in a lighter manner.

††† Mr Conrad makes *depressa*, Raf., *ellipsaria*, Raf., and *securis* (nobis), synonymous with *lineolata*,

NON-SYMPHYNOTE UNIONES.	SMOOTH.	TRIANGULAR.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	TRIANGULAR.
		*camelus. <i>Lea.</i>			*pileus. <i>Lea.</i>
		*ovatus. <i>Say. Lam. Bar. Valen.</i>			*Sowerbianus. <i>Lea.</i>
		<i>Eat. Hild. Con.</i>			*trigonus. <i>Lea.</i>
		Unio ventricosus. <i>Desh.</i>			*solidus. <i>Lea.</i>
		Unio subovatus. <i>Desh.</i>			*obliquus. <i>Lam.</i>
		Unio occidens. <i>Desh.</i>			Unio undatus. <i>Bar.</i>
		*subovatus.† <i>Lea.</i>			Unio trigonus.§ <i>Say and Con.; not of Lea.</i>
		*crassidens.‡ <i>Lam.</i>			Unio mytiloides. <i>Eat.</i>
		Unio cuneatus. <i>Bar. Eat. Hild.</i>			Unio undulatus. <i>Desh.</i>
		Unio niger? <i>Raf.</i>			Unio cordatus? <i>Raf.</i>
		Unio niger. <i>Con.</i>			Unio cordatus. <i>Con.</i>
		*carbonarius. <i>Lea.</i>			*pyramidatus. <i>Lea.</i>
		*gibber. <i>Lea.</i>			Unio rubra? <i>Raf.</i>
		*pumilis. <i>Lea.</i>			Unio mytiloides. <i>Con.</i>
		*rubiginosus. <i>Lea.</i>			*mytiloides.   <i>Raf.</i>
		*Barnesianus. <i>Lea.</i>			Mya obliqua. <i>Wood.</i>

Raf. Mr Say does the same, with the exception of *ellipsaria*, which he considers distinct; while Mr Rafinesque himself places *lineolata* and *ellipsaria* in different subgenera!!

† Mr Say makes "*ventricosus*, Bar., *occidens* (nobis), *subovatus* (nobis), (var.), and *capax*, Green, (var.)," synonymous with *cardium*, Raf. In my opinion they form at least three, perhaps four distinct species.

‡ *Crassidens*, Var. *a*, Lam., is *trapezoides* (nobis).

§ Say and Conrad both give *trigonus* (nobis) as a synonym to *undatus*, Barnes. It is difficult for me to understand why they should not at once on comparison be recognised as different species. The *trigonus* is always more angular on the umbonal slope, and the undulations at the tips of the beaks differ. This may be observed particularly in the young and perfect specimens. If a doubt could be admitted as to the difference of the form of the shell, the colour of the animal in *trigonus* would at once settle the question. It is peculiar, and differs from all the species I know in being of so deep a colour as to be almost red.

Some years since, when I described this species, I deposited a specimen in the Academy of Natural Sciences of this city, with its proper name appended. Subsequently, I found the Academy had prefixed the name of *undatus*, Barnes, to the label, and I presume this error is still continued there.

|| It is a matter of great doubt if this name ought to be admitted at all in this table. It was applied many years since, by the naturalists of this city, without reference to any particular specimen, but, as it now appears nearly certain, incorrectly. Dr Ward says the description and outline would "equally well apply to six or eight different species." The difficulty of recognising Mr Rafinesque's species is well illustrated in this one. Mr Conrad considers *triangularis*, Raf., as the type, and gives the following names of the same author as synonyms, viz. *lateralis*, *sintoxia*, *pachostea*, *mytiloides*, and *rubra*; thus charging him with making six species of one. But what is still more extraordinary, this single species, (agreeably to Mr Conrad's synonyms) is not only divided by Mr R. into different subgenera, but into different genera, and even into two different sub-



NON-SYMPHYNOTE UNIONES.	SMOOTH.	OBLIQUE.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL.
		<p>*Troostensis. <i>Lea.</i> Unio trabalis. <i>Con.</i></p> <p>*Tigris. <i>Fer.</i></p> <p>*Taitianus. <i>Lea.</i> cor. <i>Con.</i></p> <p>truncatus. <i>Swain.</i></p> <p>*decisus. <i>Lea. Con.</i></p> <p>*clavus. <i>Lam. Con.</i> Unio scalenia. <i>Raf.</i> Unio modioliformis. <i>Say</i>; not of <i>Lea.</i></p> <p>*patulus. <i>Lea.</i></p> <p>*Ravenelianus.† <i>Lea.</i></p> <p>*Rangianus. <i>Lea.</i></p> <p>*sulcatus. <i>Lea. Eat. Say.</i> Unio ridibundus. <i>Say. Eat. (Fe-</i> male.)‡</p> <p>*Haysianus. <i>Lea.</i></p> <p>*ellipsis.§ <i>Lea. Eat.</i> Unio brevisalis? <i>Sow.</i></p> <p>*castaneus. <i>Lea.</i></p>			<p>*Tampicoensis. <i>Lea.</i></p> <p>*Lecontianus. <i>Lea.</i></p> <p>*perdix. <i>Lea.</i></p> <p>pectorosus. <i>Con.</i></p> <p>*ventricosus. <i>Bar.</i></p> <p>*occidens.   <i>Lea.</i> Unio ventricosus. <i>Say.</i></p> <p>*dolabræformis. <i>Lea.</i></p> <p>*globosus. <i>Lea.</i> Sym. globosa. <i>Lea, Trans. Am. P. S.</i> Unio capax? <i>Green.</i></p> <p>*splendidus. <i>Lea.</i></p> <p>*ochraceus. <i>Say. Con.</i> Sym. ochracea. <i>Lea. Trans. Am.</i> P. S.</p> <p>*cariosus. <i>Say. Bar.</i> Unio cariosa.¶ <i>Lam.</i> Unio ovata. <i>Valen.</i> Unio luteola. <i>Con.; not of Lam.</i></p>

FAMILIES!! See "New Fresh Water Shells of the United States," p. 72, and Mr Rafinesque's "Monographie." In Mr Say's "Synonymy," *triangularis*, Raf., is considered to be the same as *ellipsis* (nobis)!

† Mr Conrad has subsequently published a different species under this name.

‡ For some years I was satisfied that Mr Say's *ridibundus* was only a variety of *sulcatus* (nobis). There can now, however, scarcely be a doubt that it is the female of that species; but it must be remarked, that this serrated shell is usually found smaller than the other; a circumstance not common with the females of other species. Mr S. describes and figures *ridibundus* in No. 1 of "American Conchology," but does not insert it in his "Synonymy" in No. 6.

§ Mr Say in his "American Conchology," refigures this, and recognises my name. Subsequently, in his "Synonymy," he makes it a synonym of *triangularis*, Raf. Mr Conrad says it is *olivarius*, Raf.

|| This and the preceding shell are so nearly allied, that it is a matter of doubt with me if it would not be preferable to unite them. Dr Ward thinks they are male and female. Subsequent examination may throw sufficient light upon them to decide with certainty. Among Mr Barnes's varieties of *ventricosus*, it is evident there are several distinct species.

¶ *U. cariosa*, Lam. (Var. 2,) is the *Alas. marginata*, Say.

NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL.
		perovatus. <i>Con.</i>  altilis. <i>Con.</i>  *multiradiatus. <i>Lea.</i> <i>Unio fasciola?</i> <i>Raf.</i> <i>Unio fasciolus.</i> <i>Con.</i> <i>Unio ligamentina.</i> <i>Desh.</i>  *Novi-Eboraci. <i>Lea.</i>  perovalis. <i>Con.</i>  *capsæformis. <i>Lea.</i>  Greenii. <i>Con.</i>  *pictus. <i>Lea.</i>  tæniatus. <i>Con.</i>  *interruptus. <i>Lea.</i>  *Menkianus. <i>Lea.</i>  *venustus. <i>Lea.</i>  *crassus. <i>Say. Bar.†</i> <i>Unio ellipticus.</i> <i>Bar.</i> <i>Unio carinatus.</i> <i>Bar.</i> <i>Unio ligamentina.</i> <i>Lam.</i>			Mya gravis. <i>Wood.</i> Unio fasciatus. <i>Con.‡</i>  *orbiculatus. <i>Hild.</i> <i>Unio abruptus.</i> § <i>Say.</i> <i>Unio crassus.</i> <i>Con.</i>  australis. <i>Lam.</i>  *Hydianus. <i>Lea.</i>  *Claibornensis. <i>Lea.</i>  *luteolus. <i>Lam.</i> <i>Unio siliquoideus.</i>    <i>Bar. Con.</i> <i>Unio inflatus.</i> <i>Bar.</i>  Childreni.¶ <i>Gray.</i>  pulcher. <i>Lea.</i>  *radiatus. <i>Lam. Bar. Hild.</i> <i>Unio Virginiana.</i> <i>Lam.</i> <i>Mya radiata.</i> <i>Gmel. Wood. Dill.</i> <i>Mya oblongata.</i> <i>Wood.</i> <i>Mya pictorum tenuis.</i> <i>Chem.</i>  *Medellinus. <i>Lea.</i>  *notatus. <i>Lea.</i>  *Vanuxemensis. <i>Lea.</i>

† Mr Barnes made eleven varieties of *crassus*; most of which were no doubt distinct species, some were plicate.

‡ Mr Conrad thinks the *crassus* of Say is *fasciata* of Mr Rafinesque. An examination of his description ought to satisfy any one that the *crassus* of Say could not have been under the eye of the author when he made his description of *fasciata*.

§ The specimen figured by Mr Say in Amer. Conch. No. 2, is a female shell. The male shell is not abrupt at the posterior margin.

|| Mr Say makes *siliquoideus* the same with *viridis*, Raf. Ferussac, in his cabinet, makes it the same with *fasciata*, Raf. Mr Conrad makes it the same with *vittata*, Raf. Ferussac, in his "Observations," states the inextricable difficulty resulting from the confusion caused by Mr Rafinesque. See "Observations," p. 13, in *Magazin de Zoologie*.

¶ I have never seen this species, but presume, from the figure in Griffith's Cuvier, very poor as it evidently is, that it is a distinct species.

NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL.
		*Nashvillianus. <i>Lea.</i>			Unio fuscus. <i>Mühl.</i>
		*Zeiglerianus. <i>Lea.</i>			Unio gibba. <i>Mühl. Pfeif.</i>
		lienosus. <i>Con.</i>			Unio Labacensis. <i>Mühl.</i>
		*obscurus. <i>Lea.</i>			Unio reniformis. <i>Schmidt.</i>
		*delodontus. <i>Lam.</i>			Unio fuscus. <i>Zeig.</i>
		Unio lacteolus. <i>Lea. D'Orb.</i>			Unio consentaneus. <i>Zeig.</i>
		*charruanus.† <i>D'Orb.</i>			Unio amnicus. <i>Zeig.</i>
		*lamellatus. <i>Lea.</i>			Unio carynthiacus? <i>Zeig.</i>
		*Bengalensis. <i>Lea.</i>			Unio decurvatus. <i>Rossmoesler.</i>
		*cæruleus. <i>Lea. Ben.</i>			Unio sinuatus. <i>Stud.</i>
		*olivarius. <i>Lea. Ben.</i>			Unio planus. <i>Stud.</i>
		*Batavus. <i>Lam. Pfeif. Flem.</i>			Unio ater.§ <i>Nil.</i>
		Mya pictorum. <i>Chem. Schröeter.</i>			
		Monta.			*Cumberlandianus. <i>Lea.</i>
		Mya ovalis.‡ <i>Soland.</i>			Smithii.   <i>Gray.</i>
		Mya Batava. <i>Wood. Maton. Dill.</i>			vibex. <i>Con.</i>
		Mysca Batava. <i>Turton.</i>			*Mühlfeldianus. <i>Lea.</i>
		Unio riparia. <i>Pfeif.</i>			*creperus. <i>Lea.</i>
		Unio pictorum. <i>Drap., pl. 11, fig. 3.</i>			*glaber. <i>Lea.</i>
					*Hildrethianus.¶ <i>Lea.</i>
					Al. ambigua? <i>Say.</i>
					*fabalis.†† <i>Lea.</i>

† The two specimens sent to me by M. D'Orbigny are so like *delodontus*, that I am strongly induced to believe that they will prove to be the young of that species.

‡ On the authority of Dillwyn.

§ On the authority of Ferussac.

|| Never having seen this shell, I place it here on the authority of Mr Gray.—See his figure in Griffith's Cuvier, Vol. XII.

¶ I retain this species among the *Uniones*, although it does not possess a perfect lateral tooth. As it is, however, thickened along the dorsal margin, and puts on the appearance of a tooth, I have concluded that it was better not to remove it to the Sub. Gen. *Margaritana*, to which it has little resemblance in its general characters. These observations may apply to *U. oriens* (nobis), and partially to *U. monodonta*, Say, (*U. soleniformis*, nobis.) Mr Say's description of *ambigua* answers well to *Hildrethianus*, but I am not sure it is the same, as he has given no figure of it. He seems to have abandoned it, as he does not insert it in his "Synonymy." Mr Conrad also avoids the insertion of it in his Synoptical Table.

†† Say and Conrad both in their catalogues give precedence to *lapillus*. *Fabalis* is in my Memoir read before the Am. Philos. Soc., May 7, 1830, and inserted in the Transactions; *capillus* was first inserted in the

NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL. <i>Unio capillus.</i> Say, Transylvania Journal, Vol. V. <i>U. lapillus.</i> Say, Am. Conch. No. 5, Con.  <i>*parvus.</i> Bar. Eat. <i>Unio parvus.</i> Con.  <i>*glans.</i> † Lea.  <i>*divaricatus.</i> Lea.  <i>*faba.</i> D'Orb.  <i>*Burroughianus.</i> Lea. D'Orb.  <i>*discus.</i> Lea.  <i>*simus.</i> Lea.  <i>*corrugatus.</i> Lam. <i>Mya corrugata.</i> Müller. Chem. <i>Gmel. Wood. Dill.</i> <i>Mya rugosa.</i> Gmel. Wood. Dill.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	OVAL. <i>Mya nodosa?</i> Gmel. Wood. Dill. <i>Mya spuria.</i> Gmel.? Wood. <i>Unio spuria.</i> Lam. <i>Unio triradiata.</i> In "Museum" at Paris.  <i>*Niloticus.</i> Fer. Caill. <i>Mya pictorum.</i> Forkael.‡  <i>*Egyptiacus.</i> § Caill. Fer.  OBLONG. <i>*brevidens.</i> Lea.  <i>tetralasmus.</i> Say.  <i>*camptodon.</i>    Say. <i>Unio declivis.</i> ¶ Con.  <i>*obesus.</i> †† Lea.  <i>*Hopetonensis.</i> Lea.  <i>*Roanokensis.</i> Lea.
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December number (1831) of the Transylvania Journal, and subsequently in the "Amer. Conch." No. 5, (Aug. 1832) under the name of *lapillus*. Mr Say does not mention why he changed the name on redescription. I should prefer the first, as a more descriptive name, were I to choose between the two.

† Mr Say doubts if the *glans* be not the same with *parvus*. I do not see how there can be any difficulty in distinguishing them. The *glans* is a much heavier shell, and the nacre of all the specimens I have seen is more or less purple, while that of *parvus* is always, I believe, white. Among many hundred specimens which have come under my notice, I have never seen one of any other colour. The texture of the nacre is also totally different, the latter being more pearly than any other of our *Uniones*. In the epidermis and beaks they also differ essentially.

‡ On the authority of Ferussac.

§ The specimen of this species which I received from M. Caillaud, the traveller, is so much like *Niloticus*, that I certainly would not myself have separated it.

|| This fine shell, as well as the preceding one, both of which are Mr Say's, seem to have been overlooked in the formation of his catalogue. They are described in his Amer. Conchology. I have never seen the shell he calls *tetralasmus*,—they may possibly prove to be the same.

¶ The shell in the Academy of Nat. Sci., described and figured by Mr Conrad in his "Monography," page 45, as *declivis*, Say, I consider to be a middle aged *camptodon*, Say. This, however, is not the opinion of all our conchologists.

†† Ferussac believes that this is *Carolinianus* of Bosc. Not having seen the specimen described by Bosc, nor having access to his description, I am unable to decide. The fact, however, of Bosc's having visited Carolina some forty years since, renders it highly probable to be so. Ferussac gives his *trapezium* as a synonym to *Carolinianus*. In my table of the *Uniones* made in 1829, I considered *Carolinianus* as the *complanatus*: in which I was most likely wrong.

## OBLONG.

\**jejunus*. *Lea*.\**complanatus*. *Lea*.*Mya complanata*. *Soland. Dill.**Unio violaceus*.† *Spangler.**Unio purpureus*.‡ *Say. Bar.**Unio rarisulcata*. *Lam.**Unio coarctata*. *Lam.**Unio purpurascens*. *Lam.**Unio rhombula*. *Lam.**Unio carinifera*. *Lam.**Unio Georgina*. *Lam.**Unio glabrata*. *Lam.**Unio sulcidens*. *Lam.**Unio fluviatilis*. *Green.**Mya rigida*? *Wood.*\**Griffithianus*. *Lea*.\**auratus*. *Lea*.*Niäa aurata*. *Swain.**Unio obtusa*.§ *Fer.**Unio depressus*.§ *Less.*\**atratus*. *Lea*.*Niäa atrata*. *Swain.**Niäa fragilis*. *Swain.*\**confertus*. *Lea*.\**paliatus*. *Ravenel's Letter.**Watereensis*. *Lea*.*Unio Raveneli*.|| *Con.*

SMOOTH.

SMOOTH.

## OBLONG.

\**fulvus*. *Lea**Unio icterinus*. *Con.*\**Congaræus*. *Lea*.\**declivis*. *Say.**Unio geometricus*.¶ *Lea*.\**Blandingianus*. *Lea*.\**depressus*. *Lam. D'Orb.**angustus*. *Lam.*\**modestus*. *Fer.*\**litoralis*. *Lam. Pfeif. Des Moul. Grat.**Unio crassus*. *Schr. Retz. Neil.**Speng.**Unio rhomboidea*. *Schr.**Unio brevialis*. *Lam.**Unio semirugata*. *Lam.**Unio nana*. *Lam.**Unio subtetragona*. *Mich.**Unio incurvus*. *Lea*.*Unio Pianensis*. *Farines.**Unio granosus*. *Schum.**Mysca ovata*. *Turt.**Mya depressa*. *Don.*

## SUBROTUND.

\**circulus*. *Lea. Eat.**Mya rotunda*? *Wood.*\**lens*.†† *Lea*.

† On the authority of Ferussac.

‡ Mr Conrad is wrong in his "Synoptical Table," in giving Mr Say's name precedence, making *complanatus* a synonym.

§ On the authority of D'Orbigny.

|| Prof. Ravenel's name being previously used for a *Unio* (Amer. Phil. Soc. Trans., Vol. V.), it becomes necessary to change Mr Conrad's name, which I do, to that of the river in which it was found.

¶ I do not find either of these names in Mr Say's Synonymy. He has, however, priority.

†† I have some doubts whether this should be considered more than a variety of *circulus*. I am not, however, sure, that it is not distinct.

## SUBROTUND.

rubellus. *Con.*Masoni. *Con.*\*rotundatus. *Lam.*Unio suborbiculata. *Lam. Blain.*Unio glebulus.† *Say.*Unio subglobosus. *Lea.*\*Paranensis. *Lea. D'Orb.*Unio Solisiana. *D'Orb.*membranacea.‡ *Lea.*Myt. membranacea. *Mat.*Myt. Matoniana. *D'Orb.*variabilis. *Lea.*Mya variabilis.§ *Mat. Wood. Dill.*Unio rotundus. *Wag.*\*personatus. *Say.*Unio capillaris. *Lea.*\*retusus. *Lam. Con.*Unio torsa. *Raf. Eat.*\*ebenus. *Lea.*Unio mytiloides. *Con. ; not Raf.*maculatus. *Con.*

## SUBROTUND.

\*Kirklandianus. *Lea.*\*subrotundus. *Lea.*Unio politus? *Say.*Unio brevis? *Crouch.*infucatus. *Con.*\*coccineus. *Lea.*Unio coccineus. *Dr Hildreth's Letter.*Unio coccineus. *Con.*Unio catillus. *Con.*

## WIDE.

\*Shepardianus. *Lea.*\*folliculatus. *Lea.*\*rectus. *Lam. Eat.*Unio prælongus. *Barn. Hild.*Unio recta. *Valen.*Unio Sageri?|| *Con.*Mya prælonga. *Wood.*\*dehiscens.¶ *Say.*Unio oriens. *Lea.*\*angustatus. *Lea.*

† Although Mr Say had published this shell in the *Transylvania Journal*, and in his *Am. Conchology*, he omitted it altogether in his "Synonymy." Other species are inserted from the vicinity of New Orleans.

‡ I formerly placed this with the *Anodontæ*, but D'Orbigny, who has seen the shell in its native waters, having placed it among the *Uniones*, I follow him, never myself having seen the shell. The figure of Dr Maton (Linn. Trans. Vol. X) is without teeth, and the text says expressly "cardo edentulus." Notwithstanding this, I am inclined to believe that D'Orbigny is right, for the form of the shell is such as I have not seen in the *Anodontæ*. Not knowing what induced M. D'Orbigny to change Dr Maton's name, I have restored it.

§ The figure of this shell in the *Lin. Soc. Trans.*, Vol. X., although so much smaller a shell than *Paranensis* (nobis), is so much like it, that I should not be surprised if they should prove to be the same.

|| Mr Conrad's figure so nearly resembles the male specimens of *U. rectus*, from Green Bay, in my cabinet, that I am persuaded the *Sageri* will not prove to be a distinct species. Drs Kirtland and Ward, and Judge Tappan, consider it a variety of *gibbosus* of Barnes.

¶ Mr Say gives Mr Rafinesque's name of *lata* precedence. Mr Eaton says that *An. lata*, Raf., is *Sym. tenuissima*, Lea.

NON-SYMPHYNOTE UNIONES.	SMOOTH.	WIDE.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	WIDE.
		<p>*<i>lanceolatus</i>.† <i>Lea</i>.</p> <p>*<i>Anodontoides</i>. <i>Lea</i>.  <i>Unio teres</i>? <i>Raf</i>.  <i>Unio teres</i>. <i>Con</i>.</p> <p>*<i>parallelopipedon</i>. <i>Lea</i>. <i>D'Orb</i>.</p> <p>*<i>platyrhynchus</i>.‡ <i>Rossmoesler</i>.</p> <p>*<i>Cailliaudii</i>. <i>Fer</i>.</p> <p>*<i>ovalis</i>. <i>Flem</i>. <i>Sow</i>.  <i>Mytilus angustior</i>.§ <i>List</i>.  <i>Mya ovalis</i>. <i>Monta</i>.  <i>Mya ovata</i>. <i>Don</i>. <i>Mat</i>. <i>Wood</i>. <i>Dill</i>.  <i>Mya depressa</i>. <i>Don</i>.  <i>Mysca solida</i>. <i>Turt</i>.  <i>Unio nodulosa</i>. <i>Lam</i>.  <i>Unio tumida</i>. <i>Retz</i>. <i>Pfeif</i>. <i>Nil</i>.  <i>Unio Michaudiana</i>? <i>Des Moul</i>.  <i>Unio ovata</i>. <i>Bouil</i>.  <i>Unio rostrata</i>. <i>Stud</i>.  <i>Unio Limagnæ</i>. <i>Bouil</i>.</p> <p>*<i>pictorum</i>. <i>Lam</i>. <i>Pfeif</i>. <i>Drap</i>. <i>Blain</i>.  <i>Crouch</i>. <i>Flem</i>. <i>Des Moul</i>. <i>Grat</i>.  <i>Bouil</i>.  <i>Mya pictorum</i>. <i>Lin</i>. <i>Poli</i>. <i>Dill</i>.  <i>Wood</i>. <i>Mat</i>.  <i>Mya corrugata</i> <i>Maroccana</i>.   <i>Chem</i>.  Long thick horse mussel. <i>Petiv</i>.</p>			<p><i>Mya angustata</i>. <i>Schræt</i>. <i>Klein</i>.  <i>Mysca pictorum</i>. <i>Turt</i>.  <i>Unio rostrata</i>. <i>Lam</i>. <i>Pfeif</i>. <i>Mich</i>.  <i>Desh</i>. <i>Bouil</i>.  <i>Unio manca</i>. <i>Lam</i>.  <i>Unio elongatula</i>. <i>Mühl</i>.  <i>Unio Turtonii</i>. <i>Payraud</i>.  <i>Unio Capigliolo</i>. <i>Payraud</i>.  <i>Unio Requienii</i>. <i>Mich</i>.  <i>Unio Deshayesii</i>. <i>Mich</i>.  <i>Unio limosa</i>. <i>Nil</i>.  <i>Unio longirostris</i>. <i>Zeigl</i>.  <i>Unio Limovianscæ</i>. <i>Fer</i>.</p> <p>*<i>elongatus</i>. <i>Pfeif</i>.</p> <p><i>productus</i>. <i>Con</i>.</p> <p>*<i>nasutus</i>. <i>Say</i>. <i>Barn</i>. <i>Swain</i>.  <i>Unio rostratus</i>. <i>Valen</i>.  <i>Mya nasuta</i>. <i>Wood</i>.  <i>Unio subrostratus</i>? <i>Say</i>.</p> <p>*<i>Fisherianus</i>. <i>Lea</i>.</p> <p>*<i>Jayensis</i>. <i>Lea</i>.</p> <p>*<i>lugubris</i>. <i>Lea</i>.</p> <p>*<i>marginalis</i>. <i>Lam</i>.  <i>Unio anodontina</i>. <i>Lam</i>.</p>

† M. Deshayes (2d edit. Lamarck) doubts if *lanceolatus* be not the young of *Anodontoides*. The first has been found only in the waters east of the Alleghany mountains, the last only in the western waters. There cannot be a doubt of their being distinct species. In size they differ altogether.

‡ This is a curious and very interesting new species which I recently received from Vienna. Its habitat is Carynthia.

§ On the authority of Fleming.

|| Chemnitz figures this shell, Vol. VI. table 3, fig. 23 & 24. From the description and outline, I have little doubt of its being a young *pictorum*, more than usually undulated in the region of the beaks. Its being rugose over the whole surface, as mentioned by him, is not evidence against its being such. As the first growth subsequently forms the beak of the shell, it ought of course to be rugose, if that be the character of the shell. The inside view is without teeth, but this is doubtless the fault of the draftsman or engraver, as the author speaks of the hinge being like the common mussel.



NON-SYMPHYNOTE UNIONES.	SMOOTH.	WIDE.	NON-SYMPHYNOTE UNIONES.	SMOOTH.	WIDE.
		*iris.† <i>Lea.</i>			*Vaughanianus. <i>Lea.</i>
		Unio nebulosus. <i>Con.</i>			Unio Carolinensis. <i>Prof. Ravenel's Letter.</i>
		*tenuissimus. <i>Lea.</i>			OBOVATE.
		Symp. tenuissima. <i>Lea</i> , in Trans. Am. P. S.			*purpuratus. <i>Lam.</i>
		An. purpurascens. <i>Swain.</i>			Mya ventricosa.§ <i>Solan.</i> <i>Hum-</i>
		Unio velum. <i>Say.</i>			<i>phreys?</i>
		*bilineatus. <i>Lea. Ben.</i>			Unio ater. <i>Lea.</i>
		Symp. bilineata. <i>Lea</i> , in Trans. Am. P. S.			Unio lugubris. <i>Say.</i>
		*Corrianus. <i>Lea.</i>			Unio Poulsoni. <i>Con.</i>
		*phaseolus. <i>Hild. Eat.</i>			rhombeus. <i>Wag.</i>
		Unio planulatus. <i>Lea.</i>			Diplodon rhombeum. <i>Spix.</i>
		Unio cuneatus.‡ <i>Barn.</i> (White var.)			*cuprinus. <i>Lea.</i>
		arcus. <i>Con.</i>			Unio metallicus.   <i>Say.</i>
		arctatus. <i>Con.</i>			*modioliformis. <i>Lea.</i>
		*gibbosus. <i>Bar. Eat. Hild.</i>			Unio delumbis. <i>Con.</i>
		Unio mucronatus. <i>Bar.</i>			*tenerus. <i>Rav.</i>
		Unio nasuta. <i>Lam.</i>			Unio tenebrosus. <i>Con.</i>
		Unio dilatata? <i>Raf.</i>			*Tappanianus. <i>Lea.</i>
		Unio dilatatus. <i>Con.</i>			*contradens. <i>Lea.</i>
		*arctior. <i>Lea.</i>			stramineus. <i>Con.</i>
		*Patagonicus. <i>D'Orb.</i>			

† Mr Say in his "Synonymy" gives *iris* as a synonym to his *subrostratus*. If they were the same I would be entitled to precedence, as my description bears date March 1829, while his is January 1831. His description, however, of *subrostratus* does not apply to my *iris*, and certainly this shell could not have been under his eye when his description was made. He says that the *subrostratus* "may be said to be the analogue of the *Unio nasutus* (nobis) of the western waters." As the *U. nasutus* inhabits the western waters, a variety of that species may have been described by him for *subrostratus*.

‡ In note to Dr Hildreth's Memoir on the shells in the vicinity of Marietta, Ohio, published in Silliman's Journal.

§ On the authority of Ferussac.

|| Mr Say in his "Synonymy" claims precedence. My Memoir bears the date of May 7, 1830; his that of January 1, 1831.

## ARCUATE.

\*crassissimus. *Fer. Des Moul. Grat.**Mya crassissima.*† *Klein.**Unio auricularis.*† *Speng.**Unio margaritacea.* *Drap.**Unio sinuata.* *Lam. Blain. Pfeif. Desh.**Unio rugosa.*† *Poir. ?*\*monodontus. *Say. Eat.**Unio soleniformis.* *Lea.*\*emarginatus. *Lea.*

Being unacquainted with the following species, I have deemed it best simply to insert a list of them, with the hope of their being determined at a future period:—

*Unio rubens.* *Menke.**Unio rugatus.* *Menke.**Unio Grænländicus.*† *Schrö. Fer.**Unio orientalis.* *Fer.**Unio nitidens.* *Fer.**Unio obtusus.* *Fer.**Unio preciosus.* *Fer.**Unio pulchellus.* *Fer.**Unio purpuratus.* *Say.**Unio musivus.*† *Speng.**Unio gibbus.*† *Speng.**Unio truncatus.*† *Speng.**Unio oviformis.* *Con.**Unio furvus.* *Con.**Unio Juliani.* *Rang.**Unio psammoica.* *D'Orb.**Unio rhuacoica.* *D'Orb.**Unio Fontainiana.* *D'Orb.**Unio hylæa.* *D'Orb.**Unio Guaraniana.* *D'Orb.*

The following species are supposed to exist in a fossil state. As the casts only are usually observed, it must be a matter of great doubt as to the propriety of making species where that is the case:—

*Unio crassiusculus.* *Sow. Flem.**Unio concinnus.* *Sow. Flem.**Unio uniformis.* *Sow. Flem.**Unio acutus.* *Sow. Flem.**Unio Listeri.* *Sow. Flem.**Unio Solandri.* *Sow. Flem.**Unio porrectus.* *Sow.**Unio compressus.* *Sow.**Unio antiquus.* *Sow.**Unio aduncus.* *Sow.**Unio cordiformis.* *Sow.**Unio crassissimus.*‡ *Sow. Flem.**Unio subconstrictus.* *Sow. Flem.**Unio hybridus.* *Sow. Flem.**Unio Urtii.* *Flem.**Unio abductus.* *Phil.**Unio peregrinus.* *Phil.**Unio petrosus.* *Mort.**Unio tumulatis.* *Mort.**Unio terrenus.* *Mort.**Unio saxulum.* *Mort.*

## II. SUBGENUS MARGARITANA.§

## TRIANGULAR.

\*complanata. *Lea.**Alas. complanata.* *Bar. Hild.**Symp. complanata.* *Lea, Trans. Am. P. S.*

† On the authority of Ferussac.

‡ This name is pre-occupied by Ferussac.

§ The genus *Margaritana* was proposed by Shumacher in his "Essai d'un Nouveau Système des Habitations des Vers Testacés," published in 1817, for the *Mya margaritifera*, Lin. (*Unio elongata*, Lam. and *Alasmodonta arcuata*, Bar.) Mr Say, in 1818, proposed to establish this same division under the generic name of *Alasmodonta*. The Danish zoologist having priority of date must have his name preferred, unless, as Mr Gray thinks, Leach's name of *Damalis* has priority of both. Unfortunately, I have not the means of referring to his description.

NON-SYMPHYNOTE MARGARITANÆ.	PLICATE.	QUADRATE.	NON-SYMPHYNOTE MARGARITANÆ.	SMOOTH.	TRIANGULAR.
		*confragosa. <i>Lea.</i> Alas. confragosa. <i>Say.</i>			<i>Mya undulata.</i> <i>Wood.</i> <i>Unio hians.</i> <i>Valen.</i> <i>Unio glabratus.</i> <i>Sow.</i>
	TRIANGULAR.	*arcula. <i>Lea.</i>			OVAL.
	OBLONG.	*marginata. <i>Lea.</i> Alas. marginata. <i>Say. Bar.</i> Alas. truncata. † <i>Say.</i> <i>Unio cariosa.</i> (Var. 2.) <i>Lam.</i> <i>Unio varicosa.</i> <i>Lam.</i> <i>Unio calceolus.</i> <i>Say</i> , not of <i>Lea.</i> <i>Mya regulosa.</i> <i>Wood.</i>  *rugosa. <i>Lea.</i> Alas. rugosa. <i>Bar. Eat. Hild.</i> Alas. abducta. <i>Say.</i>			*Raveneliana. <i>Lea.</i>  radiata. ‡ <i>Lea.</i> Alas. radiata. <i>Con.</i>  *calceola. § <i>Lea.</i> <i>Unio calceolus.</i> <i>Lea</i> , Trans. Am. P. S. Alas. marginata.    <i>Say.</i> Alas. truncata. <i>Con.</i> , not of <i>Say.</i>
	SMOOTH.	TRIANGULAR.			OBOVATE.
		*deltoidea. <i>Lea.</i>  *undulata. <i>Lea.</i> Alas. undulata. <i>Say. Bar.</i> Alas. sculptilis (young). <i>Say.</i>			*Bonellii. <i>Lea.</i> Alas. Bonellii. <i>Fer.</i> <i>Unio depressa.</i> <i>Pfeif. Mühl.</i> <i>Unio compressa.</i> <i>Menke.</i>  *Paraguayana. <i>Lea.</i> <i>Monocondylæa.</i> <i>Paraguayana.</i> ¶ <i>D'Orb.</i>

† Several specimens of fine *marginata* have been sent to me from the west, marked *Alas. truncata*, *Say*, being one of his unpublished names, but given by him to various conchologists under that name. I have never considered it distinct from the *marginata* of the eastern rivers, although it is generally larger and of finer colour in the exterior.

‡ This shell, in the teeth, except in the size of them, very closely resembles the *An. areolatus*, *Swain*. which Mr *Say* described as *Alas. edentula*. Although in both these shells there is a small cardinal tooth, in all their other characters they so closely resemble the *Anodontæ*, that it is a matter of doubt with me as to the propriety of separating them. An examination of the animals, when satisfactorily dissected, may show the necessity of placing them both, notwithstanding their possessing small teeth, with the *Anodontæ*.

§ In my Memoir in the Trans. Am. Phil. Soc., Vol. III. page 420, (page 34 of "Observations on the Genus *Unio*," ) I mention this shell as being closely allied to the genus *Alasmodonta* of *Say*. In this Synopsis I have deemed it better to transfer it to the subgenus *Margaritana*, as the lateral tooth is observable in very few individuals. *Deshayes* says it is between *Unio* and *Alasmodonta*.

|| Mr *Say* in his "Synonymy" makes *calceolus* and *Alas. marginata* the same. I am surprised at this, as their characters, in many respects, are very different, and I have never heard it even suggested before that they could be confounded.

¶ *D'Orbigny*, the distinguished traveller in South America, forms the genus *Monocondylæa* for a group of shells which he has first observed, and which possess a single cardinal tooth. This tooth certainly differs from that of the *Margaritana fluviatilis*, *Schum.*, *Alasmodonta*, *Say*; but for the present, at least, I prefer placing them in *Schumacher's* genus. The possession of one cardinal tooth, and the absence of a lateral one, is the distinguishing character of both of them. I am indebted to the great kindness of M. *D'Orbigny* for the first five—

## OBOVATE.

- \*Parchappii. *Lea*.  
 Monoc. Parchappii. *D Orb*.
- \*Corrientesensis. *Lea*.  
 Monoc. Corrientesensis. *D' Orb*.
- \*Guarayana. *Lea*.  
 Monoc. Guarayana. *D' Orb*.
- \*fossiculifera. *Lea*.  
 Monoc. fossiculifera. *D' Orb*.
- Minuana. *Lea*.  
 Monoc. Minuana. *D' Orb*.

## ARCUATE.

- \*margaritifera. *Lea*.  
*Mya margaritifera*. *Lin. Chem.*  
*Knorr. Dill. Desh. Wood.*  
*Mat. Monta. Mühl. Retz. Nöl.*  
*Margaritana fluviatilis. Schum.*  
*Unio elongata. Lam. Mich. Bouil.*  
*Unio sinuata. Pfeif.*  
*Unio Roissy. Mich.*  
*Unio margaritiferus. Pfeif. Drap.*  
*Turt.*  
*Unio rivalis. Zeig.*  
*Alas. margaritiferum. Flem.*  
*Alas. arcuata. Bar.*

\*Holstonia. *Lea*.

\*fabula. *Lea*.

The following species are unknown to me :—

*Alasmodonta Tripolitana. Fer.*

*Alasmodonta incurva. Fer.*

## III. SUBGENUS DIPSAS.

## TRIANGULAR.

- \*plicatus.† *Leach*.  
*Barbata plicata.† Humph.*  
*Myt. plicatus. Soland.*  
*Myt. dubius. Gmel. Dill.*  
*Cristaria tuberculata. Schum.*  
*An. dipsas. Blain. Fer.*  
*An. tuberculatus. Fer.*  
*An. alatus. Sow.*  
*Symph. bi-alata. Lea, Trans. Am.*  
*P. S.*  
*Unio bi-alata. Desh.*

## OVAL.

- \*discoideus.§ *Lea*.  
*Symp. discoidea. Lea, Trans. Am.*  
*P. S.*  
*Unio tenuis. Gray.||*  
*An. tenuis. Gray.||*

the sixth one I place here with some hesitation, as to its proper situation, never having seen it. It is certainly a most interesting group, and it is to be regretted that we have no description of the animal.

† Perfect specimens show the whole linear tooth, and the folds on the posterior slope and on the posterior wing, but old and imperfect specimens sometimes exhibit neither. The imperfect figure and description by Leach of this fine shell, led me to believe that it could not be the same with that which I described under the name of *Sym. bi-alata*.

‡ On the authority of Gray.

§ The posterior termination of the tooth shows some disposition to duplication, and evidently inclines to pass into the subgenus *Unio*.

|| In Griffith's Cuvier.

## IV. SUBGENUS ANODONTA.

SYMPHYNOTE ANODONTÆ.		NON-SYMPHYNOTE ANODONTÆ.	
SMOOTH.	TRIANGULAR.	SMOOTH.	OVAL.
	*Wahlamatensis. <i>Lea.</i>		<i>Schum. Wood. Monta. Tur. Dill. Mat.</i>
	OVAL.		<i>Myt. stagnalis. Gmel. Bosc. Dill. Sow.</i>
	*magnifica. <i>Lea.</i>		<i>Myt. fluviatilis. § Gmel.</i>
SMOOTH.	<i>Symp. magnifica. Lea, Trans. Am. P. S.</i>		<i>Myt. fucatus. Dill.</i>
	*Woodiana. <i>Lea.</i>		<i>Myt. Zellensis. Gmel. Schrö. Bosc.</i>
	<i>Symp. Woodiana. Lea, Trans. Am. P. S.</i>		<i>Myt. Avonensis. Monta. Wood. Ed. Encyclopædia.</i>
	*Benedictensis. <i>Lea.</i>		<i>Myt. radiatus.    Mühl. Schrö.</i>
PLICATE.	<i>Symp. Benedictensis. Lea, Trans. Am. P. S.</i>		<i>Myt. incrassatus. Shep.</i>
	*Nuttalliana. <i>Lea.</i>		<i>Myt. macula. Shep.</i>
			<i>An. anatina. Lam. Dill. Drap. Sow. Pfeif. Flem. Grat. Des Moul. Bouil.</i>
			<i>An. sulcata. Lam.</i>
SMOOTH.	OROVATE.		<i>An. dentiens. Menke.</i>
	*crispata. <i>Lam.</i>		<i>An. intermedia. Lam. Pfeif. Bouil.</i>
	OVAL.		<i>An. variabilis. (Var. b.) Drap.</i>
	*cygnea.† <i>Drap. Lam. Crouch. Blain. Pfeif. Turt. Des Moul. Flem. Grat. Bouil.</i>		<i>An. cellensis. Pfeif.</i>
SMOOTH.	<i>Myt. cygneus. Gmel. Chem. Schrö. Dill. Mühl. Monta. Mat. ‡ Shep. Tur.</i>		<i>An. ventricosa. Pfeif.</i>
	<i>Myt. anatinus. Gmel. Chem. Schrö.</i>		<i>An. ponderosa. ¶ Pfeif.</i>
			<i>An. paludosus. Tur.</i>
			<i>An. grossa. Zeig.</i>
SMOOTH.			<i>An. compressa ?†† Zeig.</i>
			<i>An. obvoluta ?†† Zeig.</i>
			<i>An. spuria. Count Yoldi's Letter.</i>
			<i>An. proboscidalis. Zeig.</i>
SMOOTH.			<i>An. piscinalis. Nil.</i>

† I have, after a good deal of consideration and examination of my specimens, and the figures in the numerous works describing the *Naiades*, satisfied myself that *An. cygnea* and *An. anatina* are not specifically distinct. If the observation of M. Poirer, that the first is viviparous and the last oviparous, be correct, then they should be certainly separated. I feel perfectly persuaded, however, that he must be in error. Turton, in his recent work on the Land and Fresh Water Shells of Great Britain, says he is "inclined to think that all our supposed species of this genus may be justly resolved into one."

‡ β of Maton and Racket (Lin. Soc. Trans., Vol. IV.) is evidently, judging from the figure, *Unio litoralis*.

§ Gmelin states this shell to be from the fresh waters of Europe, and allied to *Anatina*. If this be true, there cannot be a doubt of its being the same with *cygnea*. The *fluviatilis* of Solander and Dillwyn is said to be from North America, and is no doubt the *cataracta* of Say.

|| On the authority of Dillwyn.

¶ This and the *grossa* are certainly very different in aspect from the *cygnea*, Lam., being more ponderous and less produced behind. This difference may, however, be effected by locality. Should it prove constant, *ponderosa* ought to be considered a distinct species, and I am much disposed to think that such will prove to be the fact.

†† On the authority of Ferussac.

NON-SYMPHYNOTE ANODONTÆ.	SMOOTH.	OVAL. <i>Anodontites cygnea.</i> † <i>Poir.</i> <i>Anodontites anatina.</i> <i>Poir.</i>  <i>*Oregonensis.</i> <i>Lea.</i>  <i>*Pepiniana.</i> <i>Lea.</i>  <i>*fragilis.</i> <i>Lam.</i>  <i>uniopsis.</i> <i>Lam.</i>  <i>Chaiziana.</i> ‡ <i>Rang.</i>  <i>*undulata.</i> <i>Say.</i> <i>Anodon rugosus.</i> <i>Swain.</i> <i>Anodonta Pennsylvanica.</i> <i>Lam.</i>  <i>*Wardiana.</i> <i>Lea.</i> <i>A. virgata.</i> <i>Con.</i>  <i>*edentula.</i> <i>Lea.</i> <i>Alas. edentula.</i> <i>Say.</i> <i>Anodon. areolatus.</i> <i>Swain.</i> <i>Coop.</i>  <i>*pavonia.</i> <i>Lea.</i>  <i>*limnoica.</i> <i>D'Orb.</i>  <i>trigona.</i> § <i>Spir.</i>  <i>purpurea.</i> <i>Valen.</i>	NON-SYMPHYNOTE ANODONTÆ.	SMOOTH.	OVAL. <i>*Ferussaciana.</i> <i>Lea.</i>  <i>*salmonia.</i> <i>Lea.</i>  <i>*incerta.</i>    <i>Lea.</i> <i>imbecillis?</i> <i>Say.</i>  <i>*Newtonensis.</i> <i>Lea.</i>  <i>*fluviatilis.</i> <i>Lea.</i> <i>Myt. fluviatilis.</i> ¶ <i>Soland.</i> <i>Dill.</i> <i>Wood.</i> <i>Myt. illitus.</i> <i>Soland.</i> <i>An. cataracta.</i> <i>Say.</i> <i>An. marginata.</i> <i>Say.</i> <i>An. implicata?</i> <i>Say.</i> <i>An. teres.</i> <i>Con.</i>  <i>*Mortoniana.</i> <i>Lea.</i> <i>An. Chiquitana.</i> <i>D'Orb.</i>  <i>*glaucia.</i> †† <i>Valen.</i> <i>An. glauca.</i> <i>Lam.</i>  <i>*ovata.</i> <i>Lea.</i>  <i>*plana.</i> <i>Lea.</i> <i>An. declivis.</i> <i>Con.</i>  <i>*decora.</i> <i>Lea.</i>
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† On the authority of Des Moulins.

‡ M. Rang informs us that this species has the singular power of maintaining its vitality in the desiccated marshes of Africa, through six months of the burning sun of that region; and that he had a specimen sent to him in Paris, which was killed nearly thirteen months after it had been taken from its native bed, having occasionally been dipped in water for an hour or two only. He also mentions that the *Iridina rubens* is found with the *Chaiziana* in the Senegal, and possesses the same peculiarities of remaining in a state of torpidity during the season of great heat.

§ Ferussac considered *trigona* as the same with *crassa* of Swainson. The two figures, however, appear to me to be too different to be considered the same.

|| Dr Kirtland informs me, that a specimen of this shell, which he showed to Mr Say, was considered by Mr S. to be his *imbecillis*. If this be so, Mr Say's name is entitled to precedence. I have never seen the shell described by Mr S. as *imbecillis*.

¶ See note on *An. cygnea*, page 137.

†† The figure of this shell resembles some individuals of *Myt. fluviatilis*, Soland. (Say's *An. cataracta*), but is straighter on the superior margin. In this character it resembles the *trapezialis*. The observations of Barnes, being made when little was known of this genus, cannot now be admitted.

NON-SYMPHYNOTE ANODONTÆ.	SMOOTH.	OVAL. * <i>gigantea</i> .† <i>Lea</i> . subvexa. <i>Con</i> . * <i>Stewartiana</i> . <i>Lea</i> . * <i>gibbosa</i> . <i>Say</i> . An. inflata. <i>Major Le Conte's Cabinet</i> . * <i>grandis</i> . <i>Say. Lesueur</i> . An. corpulenta. <i>Coop</i> . SUBROTUND. * <i>suborbiculata</i> . <i>Say</i> . OBOVATE. * <i>obtusa</i> . <i>Spix</i> . An. lituratum. <i>Spix</i> . * <i>sirionos</i> . <i>D'Orb</i> . * <i>Patagonica</i> . <i>Lam</i> .	NON-SYMPHYNOTE ANODONTÆ.	SMOOTH.	OBOVATE. * <i>lato-marginata</i> .‡ <i>Lea. D'Orb</i> . An. trapezius?§ <i>Spix</i> . An. rotundus? <i>Spix</i> . * <i>Spixii</i> . <i>D'Orb</i> . porcifer.   <i>Gray</i> . * <i>trapezialis</i> . <i>Lam. Blain</i> . An. exotica.¶ <i>Lam. D'Orb</i> . An. giganteus. <i>Spix</i> . An. pencillatus? <i>Gray</i> . An. Susannæ. <i>Gray</i> . An. radiatus. <i>Spix</i> . * <i>anserina</i> . <i>Spix</i> . Georginæ. <i>Gray</i> . Parishii.†† <i>Gray</i> . Leila Parishii. <i>Gray</i> . * <i>Blainvilliana</i> .‡‡ <i>Lea</i> . An. trapezialis. <i>Crouch</i> . Irid. trapezialis. <i>D'Orb</i> .
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† *An. giganteus*, Spix., having been before described by Lamarck under the name of *trapezialis* and *exotica*, my species must retain this name.

‡ The *Patagonica* and *lato-marginata*, when they are better observed, may prove to be the same.

§ Spix's figure so closely resembles the *lato-marginata*, that I scarcely feel a doubt as to their being the same. He does not, however, notice the broad margin which is so characteristic of this species.

|| Never having seen this species, I place it here on Mr Gray's authority.

¶ So far as I have been enabled to examine specimens of this and *trapezialis*, I am disposed to think they are not distinct species.

†† On the authority of Mr Gray.

‡‡ In my description of *Blainvilliana* (Vol. V. page 77), I observed that I was induced to believe that the animal of this shell would be found to differ from that of the genus *Anodonta*. M. D'Orbigny, in his Synopsis of the Fresh Water Shells of South America, has in fact so found it. The animal has two tubes. Nevertheless, although I then proposed if such should be the case that it should be placed in a new genus, under the name of *Columba*, I have continued it in the subgenus *Anodonta*, as, with the present artificial system, which is founded on the hinge, it could not with propriety be elsewhere classed. When the family shall be arranged in a system founded on the animal structure only, it evidently must be changed, and I doubt then if it should be placed in the *Iridina*, for although it is likely that all the species of that genus have two tubes, they do not seem to possess the deflected pallear cicatrix, which I noted in the description of *Blainvilliana*.

NON-SYMPHYNOTE ANODONTÆ.	SMOOTH.	OBOVATE.
		*esula.† Jan.
		Irid. esula. D'Orb.
		crassa, Swain.
		WIDE.
		elongata. Swain.
		*ensiformis. Spix. D'Orb.
		*cylindracea. Lea.
		*subcylindracea. Lea.
		*Buchanensis. Lea.
		OBOVATE.
		*angulata. Lea.

NON-SYMPH. ANODON.	SMOOTH.	ARCULATE.
		*tenebricosa. Lea. D'Orb.
		*arcuata. Fer.
		sinuosa. Lam.
		*soleniformis. D'Orb.

The following species are unknown to me:—

Anodonta folium. Fer.  
 Anodonta Chinensis. Fer.  
 Anodonta curvatus. Fer.  
 Anodonta lugubris. Say.  
 Anodonta impura. Say.  
 Anodonta arcuata. Cail.  
 Anodonta Tævairi. Rang.  
 Anodonta Ferrarisii. D'Orb.  
 Anodonta lucida. D'Orb.  
 Anodonta Puelchana. D'Orb.

#### FOSSIL SPECIES.

Anodonta? Abyssina. Mort.

† M. D'Orbigny thinks that this is my *Blainvilliana*, but having his specimens and mine of both the species, I am induced still to believe that I am correct. The two specimens resemble each other, but are certainly distinct. The deflected pallear cicatrix exists in both, but the *esula* is more rotund, and the dorsal margin is more sinuous, and the nacre bluish white, while the five or six specimens of *Blainvilliana* which I have seen are all salmon colour.



## GENUS PLATIRIS.†

## I. SUBGENUS IRIDINA.‡

NON-SYMPH. IRIDINÆ.	SMOOTH.	OBOVATE.
		ovata. <i>Swain.</i> Irid. exotica. <i>Children.</i> Pleiodon Macmurtriei. <i>Con.</i>
		ARCULATE.
		exotica. <i>Lam.</i> Irid. striata. <i>Swain.</i> An. exotica. <i>Blain.</i>

## II. SUBGENUS SPATHA.

NON-SYMPH. SPATHÆ.	SMOOTH.	OVAL.
		* <i>rubens.</i> § <i>Lea.</i> Irid. <i>rubens.</i> <i>Desh. Rang.</i> An. <i>rubens.</i> <i>Lam. Blain.</i> An. <i>Clappertoni.</i> <i>Kœnig</i> , in <i>Denham</i> and <i>Clapperton's Journey.</i>
		WIDE.
		* <i>Nilotica.</i> <i>Lea.</i> Irid. <i>Nilotica.</i> <i>Sow. Fer. Crouch.</i> <i>Caill.</i> An. <i>dubia?</i> <i>Bosc.</i> Irid. <i>Oudniœi.</i> <i>Kœnig.</i>

† Genus *Platiris* (*nobis*), πλατυς, latus; ἰρις, iris. *Testâ æquivalvis, latè transversâ; impressiones musculares grandes; cardo longus, linearis; ligamentum externum.*

‡ When Lamarck established his genus *Iridina*, he had seen but a single species, and of that only one individual, which is figured in the *Encyclop. Methodique*, pl. 204. Other species have been since referred to his genus, which do not seem to me to fulfil the conditions of his generic description. The phrase “cardo per longitudinem tuberculosus, subcrenatus,” is by no means descriptive of the hinge belonging to the species just alluded to, which have their hinge smooth, or very slightly tuberculated. The figure in the *Encyclopædia*, and that of Blainville (Pl. 66, fig. 3), represent the same individual, and exhibit a character of hinge resembling in some measure that of an *Arca*. A second species, apparently agreeing with Lamarck's generic description, has been observed and described by Swainson, under the name of *Iridina ovata* (Phil. Mag. Vol. LXI.); and it has also been described by Mr Children under the name of *I. exotica*, (Brande's Journ. Vol. XV.). The specimen described in Brande's Journal is now in the British Museum, and that accurate naturalist, Mr John Edward Gray, who is one of the officers of that noble institution, informs me that he thinks it is identical with the shell upon which Mr Conrad has lately proposed to form a new genus, *Pleiodon*. Under these circumstances, it seems to me necessary to separate those shells having a *crenulated* hinge (which are true *Iridinæ*), from those having the hinge *smooth*, or very *slightly tuberculated*. I therefore arrange the *Iridina rubens*, *Nilotica*, &c., in a new subgenus, for which I propose the name of *Spatha*.

§ Mr Gray informs me that Cailliaud figures a species near to this from Egypt, which is in his possession, but I have not seen the shell or description.

NON-SYMPH. SPATHÆ.	SMOOTH.	WIDE.	Myt. Niloticus. <i>Wood.</i>	NON-SYMPH. SPATHÆ.	SMOOTH.	WIDE.	*siliquosa. <i>Lea.</i>
			Le mutel. <i>Adan.</i>				An. siliquosus. <i>Spix.</i>
			Irid. mutel ? <i>Rang.</i>				An. pygmæum (young). <i>Spix.</i>
							An. longinus. <i>Spix.</i>
			*elongata. <i>Lea.</i>				Irid. longina. <i>Fer.</i>
			Irid. elongata. <i>Sow.</i>				Mycetopoda siliquosus. <i>D'Orb.</i>
			*soleniformis. <i>Lea.</i>				*cælestis. <i>Lea.</i>
			Mycetopoda† soleniformis. <i>D'Orb.</i>				Irid. rostrata ? <i>Rang.</i>

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† In the present arrangement, founded on the form of the hinge, I have deemed it better not to adopt D'Orbigny's genus *Mycetopoda*, founded on the natural character or habit of the animal. He says, "perforat, sicut pholadæ." In this habit it resembles *Unio oriens* (nobis), which I have elsewhere stated buries itself about twelve inches below the surface of the sand in which it lives. D'Orbigny mentions that the two anterior cicatrices are widely separated. A more important character appears to be in the fact, that the smaller cicatrix is placed before the larger one. In the *Unio* and *Anodonta* it is placed below it, and in the *Hyria* (Lam.) it is placed above, that is, in a line with the beak. I regret that I have only the very short description that this distinguished naturalist and traveller has given in his Synopsis. Should he publish these descriptions in a fuller manner, which I believe he intends, we may be so informed as not to disagree with him.

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## ADDENDA.

Unio Katherinæ.† Lea.

\*Margaritanà Franciscana.‡ Lea.  
Monocondylæa Franciscana. Mori.

† *Testâ obovatâ, inæquilaterali, subcompressâ; valvulis subcrassis; natibus prominulis; dentibus cardinalibus magnis, lateralibus subrectisque; margaritâ albâ.*

Just as this sheet was going to press I had the pleasure to receive a communication from Lady Katherine Douglas, of St Mary's Isles, Scotland, accompanied by three beautiful views, drawn by her ladyship, of a shell from Lake Superior, which appears to me not to have been before observed. Wishing that it should be appended to this Synopsis, I have given a short description of it, taking the liberty to propose that lady's name for it. At a future period I hope to be able to present it with a figure from her drawings. Its place in the preceding arrangement would be immediately after *U. purpuratus* (Lam.), being an *obovate, smooth, non-symphynote Unio*.

‡ Since this sheet was in type I have received from M. Moricand, of Geneva, a specimen of this interesting shell. Its place in this Synopsis would be between *M. calceola* and *Bonellii*, under the division *subrotund, smooth, non-symphynote Margaritanæ*. I owe to the kindness of this gentlemen also the *U. rotundus* (Spix and Wagner), and find it distinct from *U. Paranensis* (nobis), a matter which has been doubted by M. Moricand.

In Professor Rafinesque's Monograph, and in his subsequent Papers, are inserted descriptions under the following names. Not being able to identify them, I have deemed it better simply to give a catalogue of them. Those which I suppose I have identified will be found in the foregoing table.

<b>Alasmodonta atropurpureum?</b>	<b>Unio cyclips?</b>	<b>Unio ponderosus?</b>
badium?	cuprea?	pallida?
costata?	cyphia?	plateolus?
hians?	decorticata?	pusella?
ponderosum?	diploderma?	pallens?
papyraceum?	diaphanus?	perplexus?
rugosum?	ellipsaria?	quadrula?
sulcatum?	elliptica?	retusa?
scriptum?	fasciata?	rimosus?
viridis?	fulvus?	rosea?
	fontinalis?	rivularis?
<b>Anodonta atra?</b>	fulgens?	stegaria?
aperta?	fasciolaris?	sintoxia?
cuneata?	flava?	sinuata?
digonota?	flexus?	solenoides?
inflata?	fragilis?	striata?
lata?	granulatus?	subrotunda?
Ohiensis?	interrupta?	torulosa?
solenoides?	lateralis?	teneltus?
	latissima?	triangularis?
<b>Unio antrosa?</b>	leptodon?	triqueter?
atroviolacea?	lævigata?	truncata?
argyratus?	lamobrachys?	verrucosa?
attenuata?	lineolata?	viridis?
aurata?	lividus?	vittatus?
bicolor?	megaptera?	Venus?
bullata?	montanus?	zonalis?
biloba?	melaplata?	
cardium?	nervosa?	<b>Odatelia radiata?</b>
Cliffordiana?	nodulata?	
calendis?	obliquata?	<b>Lasmonos fragilis?</b>
chloris?	obovalis?	
castaneus?	olivaria?	<b>Diplasma marginatæ?</b>
crassa?	ovata?	similis?
cinerescens?	Paphos?	vitrea?
cuneata?	pachostea?	striata?

## GEOGRAPHICAL DISTRIBUTION

OF THE

## SPECIES OF THE FAMILY NAIADES.

To render the preceding Synoptical Arrangement more complete, it was deemed advisable to make such a table as would throw together the species from each great division of the world; and to make this more useful, it has been thrown into alphabetic arrangement.

## GENUS MARGARITA.

## I. SUBGENUS UNIO.

## EUROPE.

Batavus. *Lam.*  
 crassissimus. *Fer.*  
 elongatus. *Pfeif.*  
 litoralis. *Lam.*  
 ovalis. *Flem.*  
 pictorum. *Lam.*  
 platyrhynchus. *Rossmoesler.*

## ASIA.

Bengalensis. *Lea.*  
 bilineatus. *Lea.*  
 cœruleus. *Lea.*  
 corrugatus. *Lam.*  
 Corrianus. *Lea.*

VI.—2 M

Grayanus. *Lea.*  
 lamellatus. *Lea.*  
 Leaii. *Gray.*  
 marginalis. *Lam.*  
 Murchisonianus. *Lea.*  
 olivarius. *Lea.*  
 ponderosus. *Lea.*  
 tigris. *Fer.*

## AFRICA.

divaricatus. *Lea.*  
 Egyptiacus. *Cailliaud.*  
 Niloticus. *Fer.*

## NORTH AMERICA.

acutissimus. *Lea.*  
 Æsopus. *Green.*

alatus. *Say.*  
 altilis. *Con.*  
 Anodontoides. *Lea.*  
 angustatus. *Lea.*  
 apiculatus. *Say.*  
 arcæformis. *Lea.*  
 arctior. *Lea.*  
 arctatus. *Con.*  
 arcus. *Con.*  
 asperrimus. *Lea.*  
 asper. *Lea.*  
 Barnesianus. *Lea.*  
 Blandingianus. *Lea.*  
 brevidens. *Lea.*  
 camelus. *Lea.*  
 camptodon. *Say.*  
 capsæformis. *Lea.*  
 carbonarius. *Lea.*  
 cariosus. *Say.*  
 castaneus. *Lea.*  
 Claibornensis. *Lea.*  
 clavus. *Lam.*  
 circulus. *Lea.*  
 cœlatus. *Con.*  
 coccineus. *Lea.*  
 compressus. *Lea.*  
 complanatus. *Lea.*  
 confertus. *Lea.*  
 Congaræus. *Lea.*  
 Conradicus. *Lea.*  
 contradens. *Lea.*  
 Cooperianus. *Lea.*  
 cor. *Con.*  
 cornutus. *Bar.*  
 crassidens. *Lam.*  
 crassus. *Say.*  
 creperus. *Lea.*  
 cuprinus. *Lea.*  
 Cumberlandianus. *Lea.*  
 cylindricus. *Say.*  
 decisus. *Lea.*

declivis. *Say.*  
 dehiscens. *Say.*  
 dolabriformis. *Lea.*  
 donaciformis. *Lea.*  
 Dorfeuillianus. *Lea.*  
 dromas. *Lea.*  
 ebenus. *Lea.*  
 elegans. *Lea.*  
 ellipsis. *Lea.*  
 fabalis. *Lea.*  
 Fisherianus. *Lea.*  
 foliatus. *Hild.*  
 folliculatus. *Lea.*  
 fragosus. *Con.*  
 fulvus. *Lea.*  
 gibbosus. *Bar.*  
 gibber. *Lea.*  
 glaber. *Lea.*  
 glans. *Lea.*  
 globosus. *Lea.*  
 gracilis. *Barnes.*  
 graniferus. *Lea.*  
 Greenii. *Con.*  
 Griffithianus. *Lea.*  
 Haysianus. *Lea.*  
 heterodon. *Lea.*  
 Hildrethianus. *Lea.*  
 Hopetonensis. *Lea.*  
 Hydianus. *Lea.*  
 inflatus. *Lea.*  
 infucatus. *Con.*  
 interruptus. *Lea.*  
 iris. *Lea.*  
 irroratus. *Lea.*  
 Jayensis. *Lea.*  
 jejunos. *Lea.*  
 Katherinæ. *Lea.*  
 Kirklandianus. *Lea.*  
 lævissimus. *Lea.*  
 lacrymosus. *Lea.*  
 lanceolatus. *Lea.*

Lecontianus. *Lea.*  
 lens. *Lea.*  
 lienosus. *Con.*  
 lugubris. *Lea.*  
 luteolus. *Lam.*  
 maculatus. *Con.*  
 Masoni. *Con.*  
 Medellinus. *Lea.*  
 Menkianus. *Lea.*  
 metanever. *Lea.*  
 Mühlfeldianus. *Lea.*  
 multiplicatus. *Lea.*  
 multiradiatus. *Lea.*  
 mytiloides. *Raf.*  
 modioliiformis. *Lea.*  
 monodontus. *Say.*  
 Nashvillianus. *Lea.*  
 nasutus. *Say.*  
 notatus. *Lea.*  
 Novi-Eboraci. *Lea.*  
 obesus. *Lea.*  
 obliquus. *Lam.*  
 obscurus. *Lea.*  
 occidens. *Lea.*  
 ochraceus. *Say.*  
 orbiculatus. *Hild.*  
 ovatus. *Say.*  
 palliatus. *Lea.*  
 parvus. *Bar.*  
 patulus. *Lea.*  
 pectorosus. *Con.*  
 penitus. *Con.*  
 perdix. *Lea.*  
 perovatus. *Con.*  
 perovalis. *Con.*  
 perplexus. *Lea.*  
 personatus. *Say.*  
 phaseolus. *Hild.*  
 Phillipsii. *Con.*  
 pictus. *Lea.*  
 pileus. *Lea.*

pliciferus. *Lea.*  
 plicatus. *Lesueur.*  
 productus. *Con.*  
 pulcher. *Lea.*  
 pumilis. *Lea.*  
 purpuratus. *Lam.*  
 pustulatus. *Lea.*  
 pustulosus. *Lea.*  
 pyramidatus. *Lea.*  
 radiatus. *Lam.*  
 Rangianus. *Lea.*  
 Ravenelianus. *Lea.*  
 rectus. *Lam.*  
 retusus. *Lam.*  
 Roanokensis. *Lea.*  
 rotundatus. *Lam.*  
 rubellus. *Con.*  
 rubiginosus. *Lea.*  
 Schoolcraftensis. *Lea.*  
 securis. *Lea.*  
 Shepardianus. *Lea.*  
 sinus. *Lea.*  
 solidus. *Lea.*  
 Sowerbianus. *Lea.*  
 spinosus. *Lea.*  
 splendidus. *Lea.*  
 stapes. *Lea.*  
 stramineus. *Con.*  
 subovatus. *Lea.*  
 subrotundus. *Lea.*  
 subtentus. *Say.*  
 sulcatus. *Lea.*  
 Taitianus. *Lea.*  
 Tampicoensis. *Lea.*  
 Tappanianus. *Lea.*  
 tæniatus. *Con.*  
 tenuissimus. *Lea.*  
 tenerus. *Rav.*  
 tetralasmus. *Say.*  
 trapezoides. *Lea.*  
 triangularis. *Bar.*

trigonus. *Lea*.  
 Troostensis. *Lea*.  
 tuberculatus. *Bar*.  
 turgidus. *Lea*.  
 undulatus. *Bar*.  
 Vanuxemensis. *Lea*.  
 varicosus. *Lea*.  
 Vaughanianus. *Lea*.  
 ventricosus. *Bar*.  
 venustus. *Lea*.  
 verrucosus. *Bar*.  
 vibex. *Con*.  
 Watereensis. *Lea*.  
 Zeiglerianus. *Lea*.  
 zigzag. *Lea*.

## SOUTH AMERICA.

ambiguus. *Lea*.  
 angulatus. *Lea*.  
 atratus. *Lea*.  
 auratus. *Lea*.  
 Brownianus. *Lea*.  
 Burroughianus. *Lea*.  
 charruanus. *D'Orb*.  
 Childreni. *Gray*.  
 depressus. *Lam*.  
 delodontus. *Lam*.  
 faba. *D'Orb*.  
 gigas. *Lea*.  
 granosus. *Brug*.  
 membranaceus. *Lea*.  
 modestus. *Fer*.  
 multistriatus. *Lea*.  
 Paranensis. *Lea*.  
 parallelopipedon. *Lea*.  
 Patagonicus. *D'Orb*.  
 rhombeus. *Wag*.  
 syrmatophorus. *Lea*.  
 variabilis. *Lea*.

## NEW HOLLAND.

Australis. *Lam*.  
 Novæ Hollandiæ. *Gray*.

## HABITAT UNKNOWN.

angustus. *Lam*.  
 Cailliaudii. *Fer*.  
 emarginatus. *Lea*.  
 discus. *Lea*.  
 Nicklinianus. *Lea*.  
 nodulosus. *Lea*.  
 Smithii. *Gray*.  
 truncatus. *Swain*.

## II. SUBGENUS MARGARITANA.

## EUROPE.

Bonellii. *Lea*.  
 margaritifera. *Lea*.

## NORTH AMERICA.

arcula. *Lea*.  
 calceola. *Lea*.  
 complanata. *Lea*.  
 confragosa. *Lea*.  
 deltoidea. *Lea*.  
 fabula. *Lea*.  
 Holstonia. *Lea*.  
 marginata. *Lea*.  
 radiata. *Lea*.  
 Raveneliana. *Lea*.  
 rugosa. *Lea*.  
 undulata. *Lea*.

## SOUTH AMERICA.

Corrientesensis. *Lea*.  
 fossiculifera. *Lea*.



Franciscana. *Lea.*  
 Guarayana. *Lea.*  
 Minuana. *Lea.*  
 Paraguayana. *Lea.*  
 Parchappii. *Lea.*

I am unable to place the following in the table :

## AFRICA.

Alasmodonta Tripolitina. *Fer.*

## SOUTH AMERICA.

Alasmodonta incurva. *Fer.*

## III. SUBGENUS DIPSAS.

## ASIA.

discoideus. *Lea.*  
 plicatus. *Leach.*

## IV. SUBGENUS ANODONTA.

## EUROPE.

cygnea. *Drap.*

## ASIA.

magnifica. *Lea.*  
 Woodiana. *Lea.*

## AFRICA.

arcuata. *Fer.*  
 Chaiziana. *Rang.*

## VI.—2 N

## NORTH AMERICA.

angulata. *Lea.*  
 Benedictensis. *Lea.*  
 Buchanensis. *Lea.*  
 cylindracea. *Lea.*  
 decora. *Lea.*  
 edentula. *Lea.*  
 fragilis. *Lam.*  
 Ferussaciana. *Lea.*  
 fluviatilis. *Lea.*  
 gibbosa. *Say.*  
 gigantea. *Lea.*  
 glauca. *Valen.*  
 grandis. *Say.*  
 incerta. *Lea.*  
 Newtonensis. *Lea.*  
 Nuttalliana. *Lea.*  
 Oregonensis. *Lea.*  
 ovata. *Lea.*  
 pavonia. *Lea.*  
 Pepiniana. *Lea.*  
 plana. *Lea.*  
 salmonia. *Lea.*  
 Stewartiana. *Lea.*  
 suborbiculata. *Say.*  
 subcylindracea. *Lea.*  
 subvexa. *Con.*  
 Wahlamatensis. *Lea.*  
 Wardiana. *Lea.*

## SOUTH AMERICA.

anserina. *Spix.*  
 Blainvilliana. *Lea.*  
 crassa. *Swain.*  
 elongata. *Swain.*  
 ensiformis. *Spix.*  
 esula. *Jan.*  
 Georginæ. *Gray.*  
 lato-marginata. *Lea.*  
 limnoica. *D'Orb.*

Mortoniana. *Lea*.  
 obtusa. *Spix*.  
 Parishii. *Gray*.  
 Patagonica. *Lam*.  
 porcifer. *Gray*.  
 Spixii. *D'Orb*.  
 sinuosa. *Lam*.  
 sirionos. *D'Orb*.  
 soleniformis. *D'Orb*.  
 tenebricosa. *Lea*.  
 trapezialis. *Lam*.  
 trigona. *Spix*.

## NEW HOLLAND.

purpurea. *Valen*.

## HABITAT UNKNOWN.

crispata. *Lam*.  
 exilis. *Lea*.  
 uniopsis. *Lam*.  
 undulata. *Say*.

The following species are unknown to me:—

## EUROPE.

Anodonta curvatus. *Fer*.

## ASIA.

Anodonta folium. *Fer*.  
 Anodonta Chinensis. *Fer*.

## AFRICA.

Anodonta arcuta. *Caill*.  
 Tawaii. *Rang*.

## NORTH AMERICA.

Anodonta lugubris. *Say*.  
 Anodonta impura. *Say*.

## FOSSIL SPECIES.

## NORTH AMERICA.

Anodonta? Abyssina. *Mori*.

## GENUS PLATIRIS.

## I. SUBGENUS IRIDINA.

## AFRICA.

ovata. *Swainson*.

## HABITAT UNKNOWN.

exotica. *Lam*.

## II. SUBGENUS SPATHA.

## AFRICA.

cœlestis. *Lea*.  
 elongata. *Lea*.  
 Nilotica. *Lea*.  
 rubens. *Lam*.

## SOUTH AMERICA.

siliquosa. *Lea*.  
 soleniformis. *Lea*.

Not being able satisfactorily to make out or arrange the following species, I have deemed it best simply to insert a list, in their order of habitat.

## EUROPE.

*Unio rubens.* *Menke.*  
*Unio rugatus.* *Menke.*  
*Unio gibbus.*† *Speng.*  
*Unio truncatus.*† *Speng.*

## ASIA.

*Unio orientalis.* *Fer.*

## AFRICA.

*Unio Juliani.* *Rang.*

## NORTH AMERICA.

*Unio Grænländicus.*† *Schrö.*  
*Unio purpuratus.* *Say.*  
*Unio oviformis.* *Con.*  
*Unio furvus.* *Con.*

## SOUTH AMERICA.

*Unio nitidens.* *Fer.*  
*Unio obtusus.* *Fer.*  
*Unio preciosus.* *Fer.*  
*Unio psammoica.* *D'Orb.*  
*Unio rhuacoica.* *D'Orb.*  
*Unio Fontainiana.* *D'Orb.*  
*Unio hylæa.* *D'Orb.*  
*Unio Guaraniana.* *D'Orb.*

## HABITAT UNKNOWN.

*Unio pulchellus.* *Fer.*  
*Unio musivus.*† *Speng.*

The following Fossil species have been observed in Great Britain :—

*Unio crassiusculus.* *Sow.*  
*Unio concinnus.* *Sow.*  
*Unio uniformis.* *Sow.*  
*Unio acutus.* *Sow.*  
*Unio Listeri.* *Sow.*  
*Unio Solandri.* *Sow.*  
*Unio porrectus.* *Sow.*  
*Unio compressus.* *Sow.*  
*Unio antiquus.* *Sow.*  
*Unio aduncus.* *Sow.*  
*Unio cordiformis.* *Sow.*  
*Unio crassissimus.* *Sow.*  
*Unio subconstrictus.* *Sow.*  
*Unio hybridus.* *Sow.*  
*Unio Urii.* *Flem.*  
*Unio abductus.* *Phil.*  
*Unio peregrinus.* *Phil.*

The following have been observed in the United States:

*Unio petrosus.* *Mort.*  
*Unio tumulatis.* *Mort.*  
*Unio terrenus.* *Mort.*  
*Unio saxulum.* *Mort.*

† On the authority of Ferussac,

## LIST OF AUTHORS.

The following Authors are quoted, and their names chiefly abbreviated.

<i>Adan.</i> —Adanson.	<i>Green.</i>	<i>Poli.</i>
<i>Bosc.</i>	<i>Grat.</i> —Grateloup.	<i>Pay.</i> —Payraudeau.
<i>Bouil.</i> —Bouillet.	<i>Grono.</i> —Gronovius.	<i>Phil.</i> —Phillips.
<i>Blain.</i> —Blainville.	<i>Gmel.</i> Gmelin.	
<i>Bar.</i> —Barnes.	<i>Hild.</i> —Hildreth.	<i>Retz.</i> —Retzius.
<i>Brug.</i> —Bruguère.	<i>Humph.</i> —Humphreys.	<i>Rav.</i> —Ravenel.
<i>Ben.</i> —Benson.		<i>Ross.</i> —Rossmaesler.
	<i>Jan.</i>	<i>Raf.</i> —Rafinesque.
<i>Crouch.</i>		<i>Rang.</i>
<i>Con.</i> —Conrad.	<i>Klein.</i>	<i>Shep.</i> —Shepherd.
<i>Chem.</i> —Chemnitz.	<i>Knorr.</i>	<i>Speng.</i> —Spengler.
<i>Caill.</i> —Cailliaud.	<i>Kœnig.</i>	<i>Stud.</i> —Studer.
<i>Cooper.</i>		<i>Schmidt.</i>
<i>Children.</i>	<i>Lam.</i> —Lamarck.	<i>Schroet.</i> —Schroeter.
	<i>Lesueur.</i>	<i>Solan.</i> —Solander.
<i>Dill.</i> —Dillwyn.	<i>List.</i> —Lister.	<i>Sow.</i> —Sowerby.
<i>Desh.</i> —Deshayes.	<i>Less.</i> —Lesson.	<i>Schum.</i> —Schumaker.
<i>Drap.</i> —Draparnaud.		<i>Spix.</i>
<i>Des Moul.</i> —Des Moulins.	<i>Mort.</i> —Morton.	<i>Swain.</i> —Swainson.
<i>Don.</i> —Donovan.	<i>Mich.</i> —Michaud.	<i>Say.</i>
<i>Den.</i> —Denham.	<i>Monta.</i> —Montagu.	
<i>D' Orb.</i> —D'Orbigny.	<i>Mori.</i> —Moricand.	<i>Turt.</i> —Turton.
	<i>Mat.</i> —Maton.	
<i>Eat.</i> —Eaton.	<i>Mühl.</i> —Mühlfeld.	<i>Valen.</i> —Valencienes.
	<i>Menke.</i>	
<i>Fer.</i> —Ferussac.		<i>Wag.</i> —Wagner.
<i>Flem.</i> —Fleming.	<i>Nil.</i> —Nilsson.	<i>Wood.</i>
<i>Fork.</i> —Forkel.		
<i>Far.</i> —Farines.	<i>Poir.</i> —Poiret.	<i>Yoldi.</i>
	<i>Petiv.</i> —Petiver.	
<i>Gray.</i>	<i>Pfeif.</i> —Pfeiffer.	<i>Zeig.</i> —Zeigler.

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#### ERRATA.

Page 48, line 15 from top, for 1837 read 1836.

Page 49, line 17 from top, for *is* read *in*.

Page 59, line 7 from top, for *left valve* read *right valve*.

Page 59, line 17 from bottom, for *forms* read *performs*.

Page 96, line 8 from top, for *Pepinianus* read *Pepiniana*.

Page 131, line 9 from top, for *Membranacea* read *Membranaceus*.